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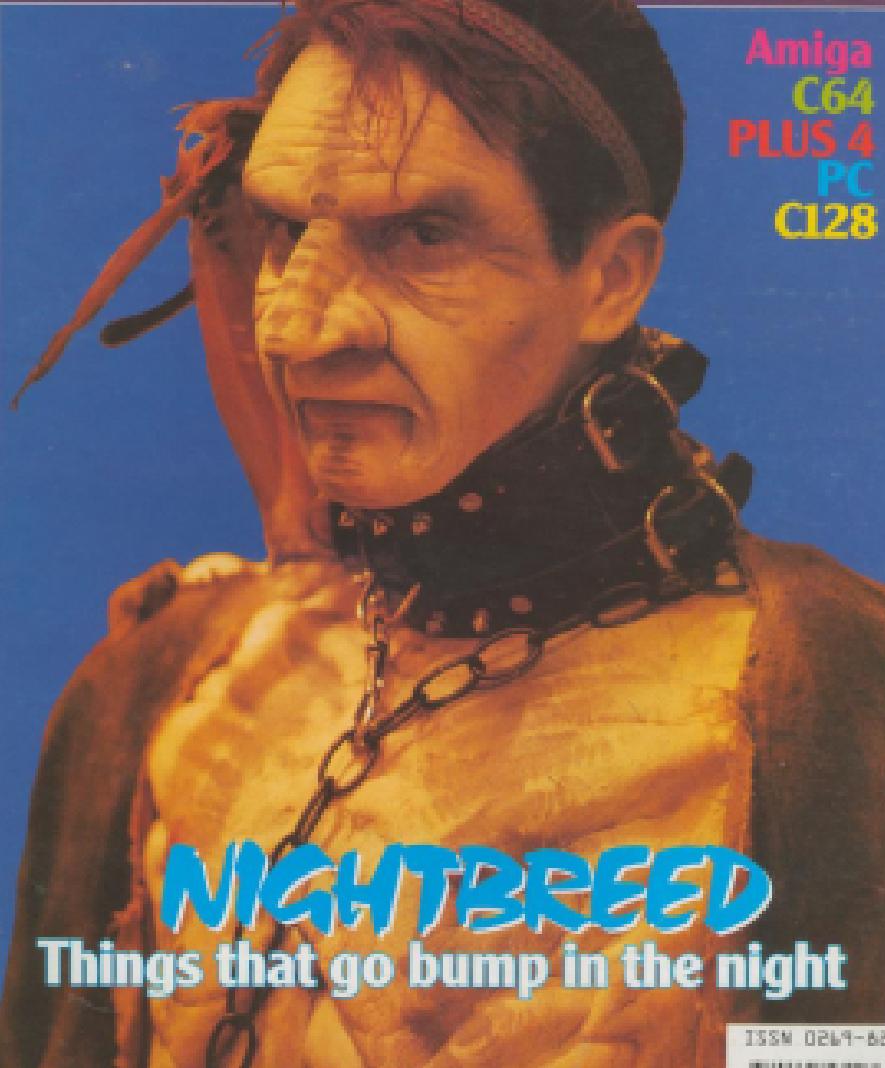
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OCTOBER 1990

\$1.99

# COMMODORE

Amiga  
C64  
PLUS 4  
PC  
C128



## NIGHTBREED

Things that go bump in the night

- Lifestyles 2000 • Role Playing Games • Program Pullout ...

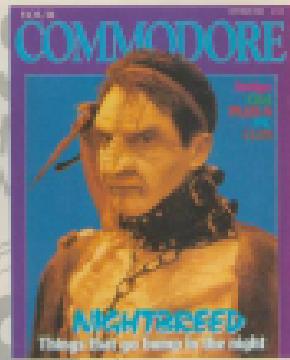
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YOUR PROGRAMMER  
PULL OUT PROGRAM SECTION  
SEE PAGE 31

MONTY  
PROGRAM

# THIS MONTH'S PROGRAMME

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Rik HENDERSON, writing

reporter, stands on the spot and reports.

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**A** gentle mist rolled through the office. Rik noticed that his colleagues around him were acting in a peculiar manner. Their eyes were hollow and, if stared into, could be translated as horizontal pits. He started to fear and shift uneasily in his seat, and the others started towards him. As they approached, their top lips drew back to reveal shattering green fangs and sharp needles where their teeth had once been. Finally there was the end...

As just another day in the Four Computer office.

We arrive at another issue, underwhelming issue. Some computer magazines may be heralding exclusives this month, but ours will have Nightbreed.

This new Clive Barker film has been delayed until April 1990 (and so has the computer game from Ocean), but that doesn't stop us giving you a taste of what is to come - thanks to Steve Jones of Sparkline and, of course, Clive Barker himself.

But this is not the only movie needed in your PUNISHED SENSATIONAL SCARAWAY YC. We also have our paludist programming section, a feature on Role-Playing Games both as reviewed, House of the Shadow preview, A Lifestyle 2000 report, and finally 15 pages of games reviews. As well as all your favourite regulars, surely we are the only complete Commodore magazine on the market.

I must dash now but if you're in the PC show on 27th September-1st October, drop by and we'll have a chat...

Rik Henderson

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## Quick on the draw

**D**OMARK, the company renowned for its license of Trivial Pursuit, the computer game, has done it again. The keenest grabbing team at Domark headquarters are set to launch the computer version of the hit game Pictionary.

If you haven't come across Pictionary where on Earth have you been living? It bears a certain resemblance to charades, but you are expected to draw the word for your team members rather than act it.

## Micro Illusions - on their own

US based Micro Illusions is set to go as their own in the UK following a recent split from its UK distributor Activision.

After a couple of months uncertainty as to just who

## Budget Blast-em

MONCASTER based Blue Ribbon is set to get your trigger finger twitching with its latest £3.99 C64 release - Syndics.

Armed with the latest cassette tally speaking on about you having to handle the latest impulse driven fighter you can't go far wrong.

Domark claims that it has an "innovative graphics package" that allows the drawee to produce lines of varying thicknesses, circles, rectangles, solids, etc., with ease.

Pictionary, the computer game, allows teams to either draw the words for their team members, or, if they don't feel up to it the computer can draw the words.

Pictionary should be out in September for the C64, PC and Amiga. Contact Domark on 01-788 2222 for more information.

was going to publish which product, Micro Illusions has announced that all of its products will be distributed in the UK by itself. Watch out for new titles with the Micro Illusions label in the near future.

Micro Illusions can be contacted on (0488) 496497.

If you're the sort of person who prefers something that challenges your brain cells rather than your trigger finger then Hi-Q Quiz may be right up your street. Also priced at £3.99, the game features questions on Sport, Entertainment and Geography.

Blue Ribbon can be contacted on (0323) 321234.

Below The Total man is coming...

Above Syndics - hardly an angel!

ABC

ISSN 0269-8277

YOUR COMMODORE

# PREVIEW



## It's a joystick - honest!

WHEN the pictures of Spectravideo's latest joystick fell out of the envelope it was greeted with cries of "What on Earth's that?". With a styling that looks as though it would be more at home on the bridge of the new Starship Enterprise than the living room floor the QS-118 Wizmaster appears to offer everything that the professional gamester requires.

## Super Wonderboy is Dynamite

SOME game titles have obviously had hours spent on deciding on a title. Activision can't be blamed for the exciting title of Super Wonderboy, one of its latest成就 conversions. Super Wonderboy is the second of Activision's wonderboy arcade licences. The hero of the original game, launched way back in 1987, has now grown up and is called upon to defend the people of wonderland from a fire-breathing dragon.

## New show for Capital

A NEW computer show is set for launch in London in November. The Computer Shopper Show will take place at Alexandra Palace from November 24 to 26. Well known companies already pledging to appear at the show include Eve-

The QS-118 features 3 different control mechanisms, push button finger and thumb control or two different sized levers, 2 fire buttons, auto fire and a computer system select switch.

Three versions of the Wizmaster are available, the QS-118P priced at £119.95 is the one that works with the C64 and Amiga. Contact Spectravideo on (0223) 510455 for details.

Super Wonderboy features 11 levels, 18 different weapons, winged beans, various types of armour, different shields - everything a young hero could want.

Activision's second成就 release is Dynamite Dan. Activision claims that we are in for a treat with the latest game around featuring cartoon style graphics, six levels, two bonus levels, with extra bonuses on the 18 bit version.

Watch out for these releases in September. Contact Activision on (0734) 211666 for more info.

sham, Fourplay, Trilogue and TyneSoft. Commodore UK will be taking a major role with the "Wonderful World Of Commodore" described by the organisers as a "major exhibition in its own right within the Computer Shopper Show".

So if you're after pre-Christmas Bargains get to Ally Pally in November.



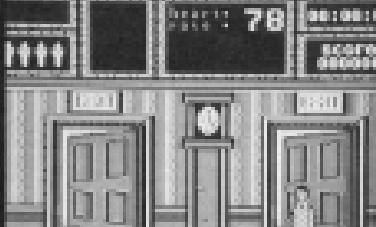
Above: Mystery of the Moony - Selection screen



Above: Mystery of the Moony - Screen 2



Above: Mystery of the Moony - Screen 2



Above: Mystery of the Moony - Screen 2



More from the

Amiga

By Burghard

Lehmann

# AMIGA WORKBENCH

**W**hen thinking about what to write in this column, it just crossed my mind that I haven't so far touched the more astonishing things the Amiga can do. like increasing graphics and sound capabilities. Maybe people would like in a column like this to hear more about how to get into programming those. (By the way, as I said in the first of this column, let me know about your interests and opinions!)

On the Amiga you have basically two ways of accessing the more powerful features of the machine. The first involves programming the hardware directly. If you are a machine code programmer, this is less difficult than you might think.

The second way, and the much better one to start with, is by making use of the many facilities the operating system offers you. That is, by using the library functions of the Amiga.

The libraries give you access to nearly all the advanced features of the Amiga, especially when it comes to graphics. You get most of what you want from the graphic library which includes some 97 functions. These allow you to draw lines, fill in spaces, animate objects and much more.

The graphics library also includes some text printing routines.

On the Amiga text is created just like any other graphics. The advantage of this is that text and graphics can be intermixed freely.

If you program in Basic, most of the advanced facilities of the Amiga are available to you in form of Basic commands. Amiga Basic from Microsoft is quite good in this way, once you get to know it. The only spelling thing about it is the editor. In my book the Amiga Basic editor ranks tops in the list of the worst programs ever written.

But the word is, that Microsoft is developing a new version of their Basic which will be bundled with Workbench 1.4, expected to get onto the market sometime next year.

Anything has to be an improvement on the appalling present editor. I only hope that Microsoft will indeed spend some considerable time on improving the editor and not concentrate all their time on developing fancy new Basic commands and then do the editor again on the quick!

Amiga Basic also allows you to use the Amiga libraries. This is one of its strongest features, even though I would advise you to consider changing to C or assembler if you want to use the libraries extensively and do serious programming.

the world of  
Amiga  
Card-Henry  
mann

# AMIGA WORKBENCH

## AMIGA WORKBENCH ■

This brings me to my pet-hate, which is C.

C is supposed to be the language of the Amiga. Most of the examples given in the Amiga Reference Manual, published by Addison Wesley, are given in C.

Unfortunately, C is expensive, and, considering the time it takes to compile and link a program in C, I can't see for the life of me what the supposed time advantage in program development over assembler is to be!

I program in assembler, using the GEM assembler by JESoft. Most programs I can execute almost immediately after I have written them and inspect the results of my efforts. Even if I break a large program down into modules and have to link them, I can look at the fruits of my labour far sooner with C!

At this point a spot of advice to assembler programmers: Even if you have an assembler that can use the Amiga Include files, don't use them! It takes too long for the assembler to assemble all the Include files which are needed from disk. Sometimes your source needs only one or two variables out of hundreds in a complete Include file.

Instead, type the library offsets and other system equates your source needs at the beginning of the source file in yourself. This is initially a bit more work, but once you have done this, you can use most of it over and over again by just merging them into any new source file you are writing - that is, if your assembler has got a merging facility, which it surely has, if it allows you to use Include files... This additional work pays off handsomely in having your source files assembled in next to no time.

If you program in C, you have no other choice but to use the Include files. This is why compiling a C program can be such a long drawn out process.

At this point some of you might inquire, what on earth Include files are.

Include files are simply lists of system variables compiled by Commodore in order to make life supposedly easier for C and assembler programmers. On other machines you have to compile these offsets and variables yourself from books and manuals. The Include files, which come with every C-compiler and with most assemblers, make it unnecessary for you to type these things in yourself. And, as I've said, C-compilers depend upon Include files.

There are two types of Include files: The i-Include files for C-compilers and the b-Include files for assemblers. All Include files are categorized by the Amiga libraries. E.g. there is an Include file for the Exec library, one for the Initiation library and so on.

If you want to have a look at an Include file, simply use the "type" command from CLI or load the Include file into Ed, the CLI editor, or any wordprocessor.

Amiga Basic also requires Include files if you want to use libraries and devices from it. Unfortunately, Amiga Basic can't do with either the i-Include files nor the b-Include files. It needs special Include files, called "bmaps". There is a program on the Extras disk which converts any Include file into a bmap file which can be used by Amiga Basic.

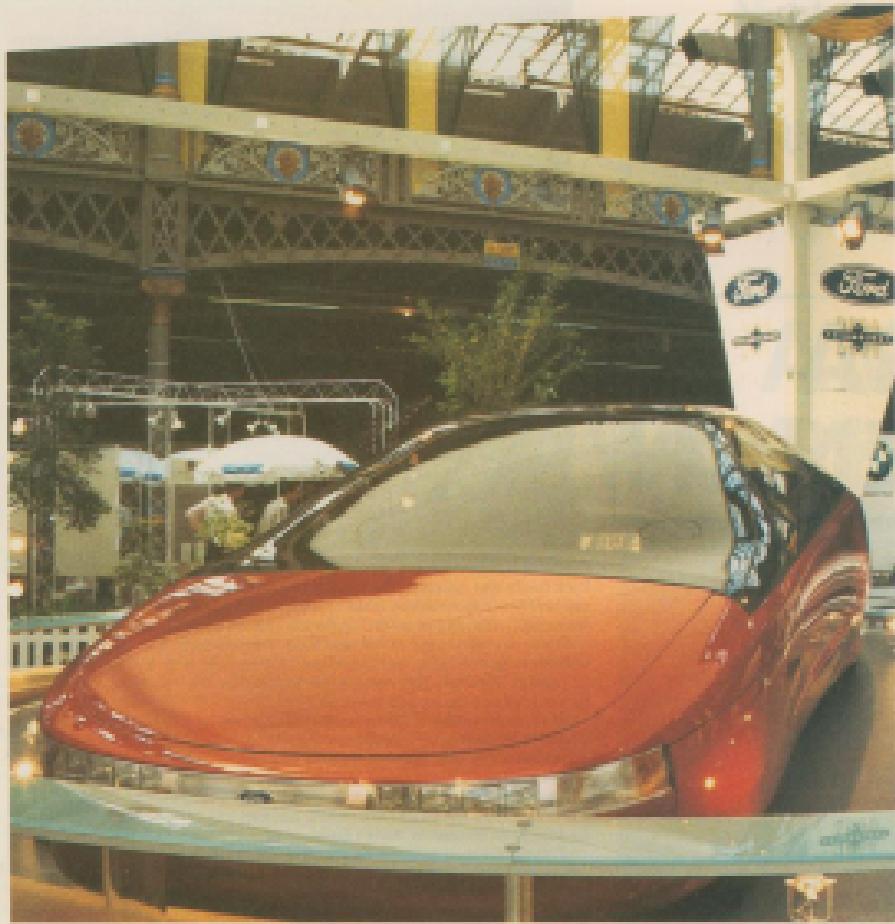
Finally, programming the Amiga hardware directly is, as I said, easier than you might think. What you do here simply is you write certain values into certain fixed locations. These are the registers of the special chips of the Amiga. This is very similar to programming, let's say, the YM2 sound chip on the Commodore 64.

Most of the information you'll need for that you'll find in the Amiga Hardware Reference Manual published by Addison Wesley. For people who are into machine code programming, this is the raison de d'etre of the four massive reference manuals.

Even better, especially if you want lots of example programs in assembler, is the Amiga System Programmer's Guide published by Abacus. And then, I may tell you, there will very soon be a book on this subject on the market, written by yours truly and published by Flair Press in England.

If you ever want to attempt to program the Amiga hardware directly, you have to be aware that the Amiga is a multitasking machine. Therefore, you can't program the Amiga as if you've got the whole machine to yourself. Whatever memory your program needs you have to allocate using the functions provided by Exec. If you program the hardware directly, very often it is a good idea to briefly suspend multitasking by using the *Kill Forked* library function.

Always remember to switch multitasking on again with the *Revert* function and, when you are done, to free the memory you have allocated for your program! Otherwise it isn't fair to other programs!



Above: The Probe GSi concept car

# FUTURE SHO

Rik Henderson visits The Daily Express Lifestyles 2000, and is thrust forward in time to sample a taste of the future.

### Photography by Frane Maroevic

... see silicon chips...  
... delivery to the...  
... tomorrow's home...  
... sports...  
... car...  
... ...

**A**lthough Lifestyles 2000 was hyped in just about every form of media, I really did not know what sort of show to expect. I knew that there would be many companies jostling to grab the punters' attention, but how much were they going to express the idea of life in the year 2000? Not much was the answer I came up with. But shows that stop one from enjoying oneself, are bloody likely.

There were many stands, the majority of which being larger than an average and bedraggled flat, although whoever came up with the idea of placing Sky TV next to BSBI had better think a little for the next show - and a next show there will undoubtedly be.

We (my photographer pal, Frane, and myself) meandered into Olympia with our knees knocking (well, gently pressing the doorknob) with anticipation, when our eyes popped out and our tongues rolled to the floor, for there in front of us was the bar.

Once our palates had been christened with the beer of the year 2000, we set about to amass some world shattering exclusives. Our first stop was the motor spandit! Fend stand, with its car of the future the Probe V. A very sleek car indeed and one to be seen in. It has actually been tested in more aerodynamically efficient than a supersonic F15 military jet fighter. I'd swap it for my Raleigh Women anytime.

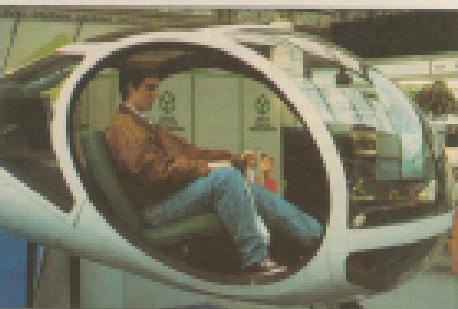
We then strolled off to the Network Southeast carbuncle of a stand - after we'd broken out of the train that the Probe V had placed us in - which was a lot better inside than out. It presented an accurate representation of what tomorrow - repeat included - will be travelling on in the early nineties. It was very nice too, with digitised displays presenting time, destination, and current stop (this is in the first class section), as well as individual light switches for each passenger. The only problem I have with this is that the first line these trains will be installed on will be the Chiltern line. For those who don't know, Wembley Stadium is on the Chiltern line; I wonder how long the 75 vehicles planned for delivery in late 1999 will last?

On our way to more far and future frolics we passed the Kaliber stand, and on a hot day, such as it was, the prospect of a free drink was a pleasant one to say the least. "But it's got no alcohol in it!" exclaimed Frane, oh what a chortle we had.

The BSBI stand was far more extravagant than the one accommodating SKY, but then it had to be because of BSBI's failure to release a satellite dish that works. They were even giving away free badges of yourself, digitised on a normal video camera. Naturally I went back a second time, there's nothing better than having something (or two) to remember the show with, even if they make you look a complete dipshit. But again, I do not see how this links into the theme of the year 2000.

The most impressive stand of all must go to Tomorrow World, their stand was so large that they had constructed a complete studio in the centre. Around the studio were lots of small exhibits, featuring inventions and gadgetry that had been displayed on the show at one point. An honourable mention must go to the light drums, this provided hours of endless laughter (or at least a few minutes) watching people trying to hit objects that they could not see. Practical? Not on your nelly, not for drums anyway. We watched an episode of TW being made with the public controlling all aspects of the production, one could hardly tell the difference between this and the real version.

The ultimate part of the show, for me, was the fashion show. To pull you into the mood of actually looking at the clothes and not the pretty girls parading them, the escapade had a theme. "In the year 2000, the ozone layer has been destroyed, the great house effect is total" was the scenario, but honestly



Above: Rik Henderson in a rather peculiar aircraft.

OCK  
YOUR COMMODORE

## ■ FEATURE

Before it's a  
model, I wouldn't  
mind sticking it  
together



*"I don't really see  
how a pair of cycling  
shorts and a rather  
flimsy top will stop  
you being fried to a  
crisp."*



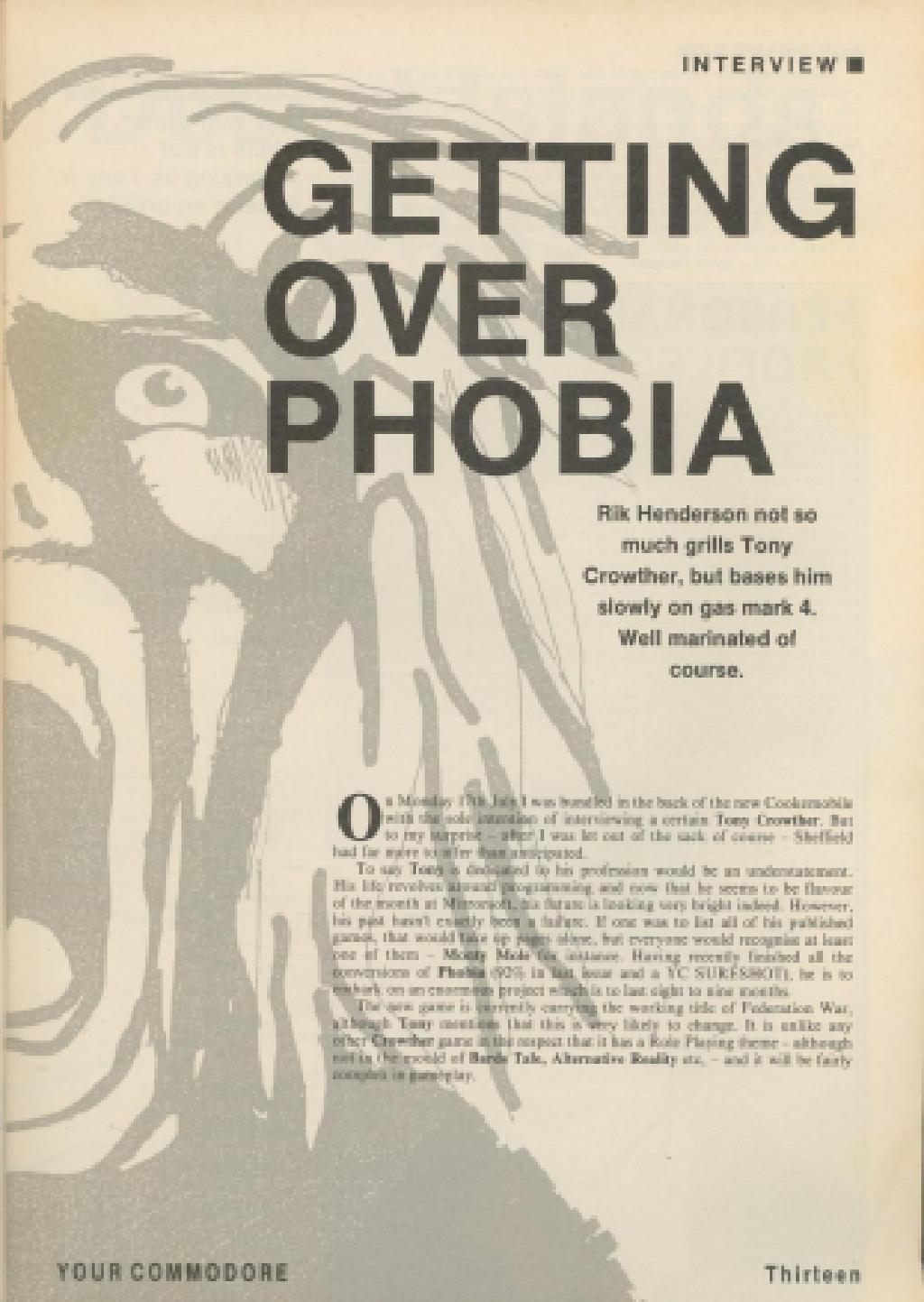
I don't really see how a pair of cycling shorts and a rather flimsy top will stop you being fried to a crisp. Oh well, the girls were pretty.

They must of been dying in the boiler suits that they had to wear for part of it, the whole exhibition was baking hot, and Frazee and myself welcomed every chance we could get to have a rest. Fortunately we had plenty of chances, and therefore experienced a wonderful time.

Maybe Lifestyles 2000 wasn't quite the right title for such an exhibition - I would have liked to have seen a little more futuristic equipment, in preference to a bubbly spa bath - but for all out enjoyment you cannot fault it. Frazee had a great time too, and even walked away with a radio cap as a prize (photographers nowadays, jah).

Also missing was an in-depth look at the essential environmental issues - far more important for the year 2000 than satellite television - although Friends of the Earth were there, just not in force.

# GETTING OVER PHOBIA



Rik Henderson not so much grills Tony Crowther, but bases him slowly on gas mark 4. Well marinated of course.

**O**n Monday 13th July I was bundled in the back of the new Cockmobile with the sole intention of interviewing a certain Tony Crowther. But to my surprise – after I was let out of the sack of course – Sheffield had far more to offer than anticipated.

To say Tony is dedicated to his profession would be an understatement. His life revolves around programming, and now that he seems to be flavour of the month at Mipcom97, his future is looking very bright indeed. However, his past hasn't exactly been a dudie. If one was to list all of his published games, that would take up page after page, but everyone would recognise at least one of them – *Moby Mole* for instance. Having recently finished all the conversions of *Phobia* (90% in this issue and a VC SUPERSHOT), he is to embark on an enormous project which is to last eight to nine months.

The new game is currently carrying the working title of *Pokeman War*, although Tony cautions that this is very likely to change. It is unlike any other Crowther game in the respect that it has a Role Playing theme – although set in the world of Bardic Tales, Alternative Reality etc. – and it will be fairly complex in gameplay.

## INTERVIEW ■

Based very loosely on the plot of Star Wars, you play the part of an evil commander (not unlike Darth Vader) and you must clear a planet from rebels who do not wish to comply with the Federation. Once this task has been completed you can turn on your superiors and try to take over the Federation base (not unlike the Death Star).

All this is done using a rather new graphical style. The map on which the action takes place is seen in a top-down view, although everything is heavily 3D. Columns, walls and other landscape features (such as a waterfall) rise out of the darkness below towards the screen, and you can zoom down to see the floor. All the graphics are very well drawn, which is not surprising as Tony is at heart an artist, and he has recently programmed himself an easy to use Amiga Sprite Designer.

**"All the graphics are very well drawn, which is not surprising as Tony is at heart an artist..."**

## PERSONALITY PROFILE

Name: Tony 'Raw' Crossiter

Age: About 24

Favourite Computer: Amiga

Favourite Software Company: Microsoft (naturally)

Favourite Films: *Alien*, *Star Wars*, *Rocky*, *Pink Floyd's The Wall*, *The Last Starfighter*, Any Schwarzenegger movie

Favourite TV Show: *Lo Law*

Favourite Books: *Star Wars* Manual, Most Art Books

Favourite Food: Asia's Cooking (general)

Favourite Records: Anything by Iron Maiden

Favourite Sports: Cycling, Snooker on TV

Favourite Paper: *The Times* because it comes free through the post

Favourite Magazine: Amo with good reviews of *Crossfire* games

Worst Computer: Spectrum

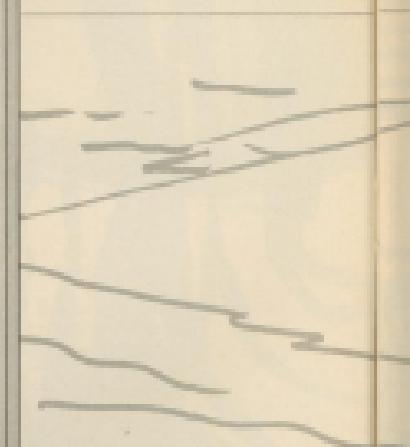
Worst Computer Games: Any games that rip off an existing one

Worst TV Show: *Neighbours*

Likes: Programming

Hates: Life in a bad mood, Crap games, Not being able to drive

Other Hobbies: Rowing (slightly)



# Desert Islands Disks

I asked Tim that if he could have a computer - he requested an Amiga and a good power supply whilst stranded on a desert island, but was only allowed to bring along ten pieces of software, what would he take? This is his list:

#### *Am Assembler*

"This would enable him to code for any other utilities/program my mind don't like using other people's utilities and/or."

#### *Dungeon Master*

"I was so engrossed in DM that when I faced the warden, and couldn't get past him, I phoned FTL in America and asked them for help. Since then I've completed Chaos Strikes Back. Working for Microfright does have its advantages."

#### *Nebulus*

"A very good game, possibly swayed by the fact that I received a free copy."

#### *Shadowgate*

"Although this was my least favourite of the Shadow games, it deserves a mention because I completed it in a day. David Bishop and I communicated over the phone, proving the old adage 'Two heads are better than one'."

#### *Shanghai*

"I often play this with Lisa (the wife). It is one of the few games she enjoys."

#### *Emerald Mines II + 2*

"I'll count these as one game, because I've got them both on one disk. I can't remember if they're called Emerald Mines or not, but I think they're better than Boulderoids, although almost clones."

#### *Bomberman*

"Okay, so it's my own game. I still play it often, it reminds me of all the hours I spent designing the screens. A lot of thought went into the later ones."

#### *Clown Sisters*

"A silly little game, but fun none-the-less."

#### *Sergant*

"A sick game and very enjoyable. It's a shame though, my disk has gone corrupt."

#### *Any Infocom Adventure*

"I have completed Zork One, but the Infocom adventures are easily my favourite games of all time. I prefer games that require a lot of thought."

And so we departed the Crowthes household and visited my favourite part of Sheffield. The Pub. Congratulations must also go to the Crowthes as only three days after the interview Mrs Crowthes gave birth to a bouncing baby girl, Sarah Anne Crowthes.

## ■ PC CORNER

Dear PC Corner,

I am writing to profess my thanks for the recent inclusion in your magazine of the Commodore PC's feature, and to inquire as to whether you may possibly be able to assist me with a few queries I have.

I recently decided to pursue a series of studies with the Open University. Armed with my trusty C64 I set about enquiring about the O.U. Information Technology course. Unfortunately I found that my C64 was not suitable for the course as it is not IBM compatible. The O.U. stipulate that the machine used for the course should use MS-DOS and have a minimum 3128 RAM.

I therefore began to check out my local vendors. I soon discovered that I could get hold of a Commodore PCI, which I did. Okay, so I now have a machine matching the O.U.'s criteria, albeit a very basic one. Some time in the future I would dearly like to beef it up. I went back to the vendor and asked my questions of a bland-faced branch manager, and more than 2 weeks later I am still awaiting some form of written reply!

As I purchased a very basic PC, I am aware that I can increase memory on the motherboard up to 640K, however, with none commercially available software requiring upwards of 1MByte, obviously 640K is insufficient. I would like to add more. I asked therefore, with the present configuration of my machine, is it possible to add a hard card, and if so, how would I go about it? In the fullness of time, and as funds became available, I would also like to add other facilities such as a modem card and a fax card. Again I was met with a blank stare and "Give me your name and address, I'll consult our technical people and come back to you". Some two weeks later, I again visited the shop. "No answers yet", and the same blank stare. Then I asked if I could upgrade the CGA card from the PCI and replace it with an EGA card, or even a VGA card. I'm currently awaiting an answer from their "Technical People" on that too!

As the PCI is an IBM clone, I assumed that there'd be very little or no problem with what I want to do, but I would like an authoritative ps or no before I commit my precious finances.

I bought your Commodore whilst I was using my C64, and in all honesty, have been secretly looking for a PC magazine with a Commodore bias. In fact, I purchased the August '89 edition of the magazine because I still own my C64, and I wanted to study the listings to see if I needed to use any of them, when I started across your PC feature. As I now have a PCI and a C64, I now have the means to continue purchasing your publication. When I purchased the PCI, I got Concept DATA's AMBLE 1 software and GW Basic that was bundled with it but I am curious as to whether, or not, as with the C64, the Plus/4 and the C128, you provide listings in the magazine; are there any plans to include a similar facility for the PCI either in GW Basic or in any of the other languages available with these machines?

All the best Ian McCall, Thameley-on-Trent.

Got a floppy  
hard drive? Our  
PC Specialist  
can help you with  
your PC problems



Dear Alastair,

The problem of trying to get information about a computer from a sales man is an old, old story. You don't say exactly where you purchased your PCI but I'm betting that it was from a main street high street dealer. In my opinion the after sales help/service provided by many larger shops is simply atrocious, once they've got your money they simply want to give you your nice new

# PC CORNER

package and watch you disappear into the distance. I have found that you can get much better help if you purchase computers, peripherals etc, if you go to a local computer dealer. OK as they may not be able to offer you all of those wonderful deals that you get on the high street but they are far more likely to be willing to offer you advice in the long term.

That's enough of me griping on, now for your queries. A hard card can be fitted to your PC1. Addons in Southampton produce one that is portable. Addons can be contacted on (0703) 828262.

Any PC standard monitor and fan card can be plugged into the expansion bus as necessary.

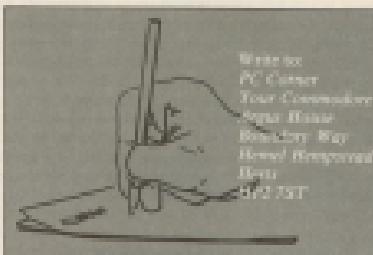
Now for the video cards, replacing the CGA card involves disabling the onboard video by switching on switch 4 as detailed in the user manual, page 1/3. Your new video card will need to be placed in the expansion bus also.

Unfortunately you only have three available so it's your decision which boards you choose to aim.

Your Commodore has prided itself on the quality of its listings for many years. As Commodore venture into new computers it is the magazines intention to meet with them. Thus, yes we do intend to produce PC programming features and listings. However, while we have a large number of C64, Plus 4 and C128 programs arriving on our doorstep each day we have never had any for the PC. So come on out there if you are into the PC and would like to write programming features or have produced a program that you think will be of interest to other readers of Your Commodore, get in touch!



**P**C Corner is designed to be your forum in the World of Commodore PCs. If you have any opinions that you would like to share, questions that you would like to see answered, or simply ideas for articles then do write to us. Without your help we can't make this column work.



Due to the pressures of getting a magazine out each month we can only answer queries through this column and cannot answer them on an individual basis.

# ORNER

# WOT NO

**Intergalactic layabout**  
**Alex Bardy explores the**  
**enormous world of Role**  
**Playing Games.**

Explain the basic principles of a role-playing game (RPG) to the average "man in the street" and opinions tend to be varied, some are plain mystified ("he has nothing since sliced bread and...erm...monopoly?"), while others find it quite fascinating ("he has nothing since sliced bread and...erm...monopoly?"). Truth be told, RPGs have been around for well nigh 13 years now, and probably an awful lot more if people had only recognised it in times long passed; originally considered a direct descendant of the wargame, these past two or three years have seen the role-playing game become something of an artform among certain 'factions'. 'The Hobbit' has grown immensely in popularity in recent years, commensurate with the comic and computer games industries actually - and the key to all this growth? Quite simply, creativity and leisure. And nowhere are these two factors more in evidence (or indeed, more important) than in a role-playing game...

The very idea of taking on the role of somebody else (much like an actor or actress in an award-winning oojamaflop) opens up a world of possibilities for the individual, but when that role can be anything from an alien to a superhero, a cowboy, a 19th century explorer, or a human to a fantastic creature of myth, that world of possibilities becomes all the more inviting, and there are usually three or four of you all playing such varied roles - that's what makes an RPG that little bit extra special.

Given a competent GameMaster (GM) - the person who 'runs' the game - a role-playing session can usually last for hours and hours (all the ones at that). The major difference between your everyday comic or computer adventure game and a role-playing session lies in the flexibility of the game - even the largest computer running the largest adventure game has a finite number of branches and/or endings. Not so with a role-playing game, which can (theoretically) run forever, while still continuously varying; the "limits" of an RPG are classically defined as "the GM's imagination and leisure time", and that's about as accurate as you can get without doing a nobbler over the philosophical/metaphysical possibilities, etc.

Some of the more popular RPGs currently available include:

**DUNGEONS & DRAGONS (D&D)/ADVANCED DUNGEONS & DRAGONS (AD&D)** - the grandfather of them all, D&D is still very popular even today, not least because of the huge amount of support material available for the system. For those who don't know (and haven't guessed), D&D is a fantasy-orientated game with elves, fairies, orcs, and yes, dragons too - all making up a colourful and dangerous backdrop for adventure.

**TRAVELLER/MEGATRAVELLER** - another 'older' although this time the backdrop is a huge universe of galaxy-hopping travellers. Laser rifles, giant spaceports, and loads of technological marvels abound in this game, and support material (sourcebooks, scenarios, etc.) is extensive to say the least.

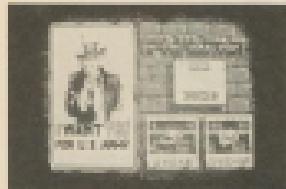
**CALL OF CTHULHU (CoC)** - the first of the new breed of RPGs, CoC is an RPG and not so much to a particular genre as to a particular world (or more accurately, to the 'worlds' of a particular author). The gentleman in question is one Howard Phillips Lovecraft, a nihilistic author of early 20th



ABOVE: Book 'em  
David

*"The very idea of taking on the role of somebody else (much like an actor or actress in an award-winning oojamaflop) opens up a world of possibilities..."*

# BOARD



Above: I haven't even been yet, actually!

century, his stories tell of some of the nastiest beasts you could ever wish to meet, and he linked together two mythical worlds of such creatures (The Dunwichian Tales and The Cthulhu Myths respectively).

The Call of Cthulhu RPG was originally based on Lovecraft's Myths tales, but the game system has since been expanded to cover nearly all his works. Support material, once again, is generous. Recommended.

**TWILIGHT: 2089** and **2300AD** - two RPGs (loosely) set around our own Mother Earth, the former is one of the very few post-holocaust RPGs currently available, while the latter is set in - surprise, surprise - the year 2300 - a time when several powers (notably French, American, and Chinese) have achieved space travel, and colonised planets abound the galaxy. Both these games are well supported, and as an ardent fan of 2300AD, the latter comes highly recommended.

**MARVEL SUPERHEROES** and **DC HEROES** - both of these games (licensed by Marvel and DC Comics respectively) allow prospective players the chance to don fancy dress, mask, and all-important tights, and to go around snapping tall buildings and levelling blocks with single blows, etc. Great fun for all, and support material isn't thin on the ground for either game...

**JURASSIC** - a truly different RPG this, it's a sort of science-fiction game set in a world where magic and science become one and the same. The game has been around for quite some time, and has something of a cult following at present, it seems to be becoming increasingly popular though.

Set in its own world, Jurassic has an awful lot going for it, the complete 'alien-ness' of the world it's set in is just the first of many pluses. Unfortunately, there's very little support material for the game, and it looks set to stay something of a cult game rather than anything else.

**BATTLETECH** - this 'RPG' started life as a wargame and, after almost 3 years, has recently become extremely popular with the masses. The game revolves around huge mecha beasts (much like those Transformers you see in the TV ad) bashing the hell out of each other across all kinds of terrain. Fun while it lasts, the game has been given tremendous support (indeed, over the last few years no other game has matched it for the sheer volume of material that's become available).

**GURPS** - GURPS (Generic Universal Role-Playing System) is an attempt to cash in on every genre of roleplaying - the game system has been designed in such a manner that you can use it for all settings, be they fantasy, SF, cartoons, espionage, or whatever. It's an experiment that's proven very successful, and currently available are sourcebooks (with extra rules, etc.) for all types of RPG, and even particular authors - there are books specifically covering Andrzej Sapkowski's WITCH WORLD things and Alan Dean Foster's books for example.

**SPACE: 1889** (1889) - one of the newest RPGs to be released, it covers a kind of pseudo-historical 19th century where a guy called Thomas Edison has discovered space travel, and people like H G Wells and Jules Verne are more certainly over crazy. Venus, Mars, and the Moon are also inhabited (by lizardmen, marlins, and scientists respectively). Oh, and there, the atom, faerie, fishes, etc. haven't been discovered yet - if it all sounds a bit unusual, that's because it is, for it's a marvel of game design, and plays extremely well to boot! And all the Victorian 'dressing' does nothing but enhance the game's overall effect on the players. Support material is limited at the moment, but things seem to be picking up in this direction now. 1889 is my personal fave of the bunch at the moment but I'm sure I'll get over it soon, promise...

# HOUND OF THE SHADOW

**T**hose familiar with the 'Call of Cthulhu' solo-playing game will recognise the theme behind Electronic Arts latest computerised role-playing adventure. Having a distinct Cthulhu Myths flavour, it is based in London in the rip-roaring 1920s - and we can be assured that there is more than a tad of horror involved.

The first task to be performed, as in the RPGs, is to create a character. This is done very impressively, using mood graphics to the maximum effect. You can be male or female - this is your first choice - American or British, and you can choose from numerous professions. Not only are these characteristics involved (you do not get to see them, only sentences on what sort of person you are), the skill system is enormous.

There are many skills which you possess, but they are all set at an average level. Once you have determined how experienced your character is to be - via age, etc - you get to raise some skills a little, in order to be more adept at certain tasks.



Right: He  
realises  
being  
greeted by  
the  
Shadow.



Left: What's this  
I spy, will blow  
me down like a  
puff.

The gameplay itself is rather like a text adventure, although graphics are well distributed throughout. The difference between this and, say an Infocom adventure, is that *The Hound of the Shadow* is completely interactive. Depending on how proficient you are at certain skills, different text will come up at some actions. Every little feature that your character has, which makes him/her an individual, has an effect on the play, although it is possible to complete the game with any sort of character.

The parser is not enormous, nor is it overly complex, but this is not a programming error, it is in fact a feature. The parser is very simple to use indeed. This gives you the hassle of having to find the correct words to key into the computer in order to complete a simple logic problem.

Unlike most other adventures (which describes *The Hound of the Shadow* perfectly), this game goes not rely on objects to build a complex clue pattern. Instead people are the order of the day, provoking you to take more active role in what goes on around you, and allows you to slip into your character easily.

Every action undertaken says every time, which is important to the plot. The timeline is a very important feature. This is to be rigorously adhered to otherwise the Hound, for it is after you or your friend, will rip you to shreds in typical H. P. Lovecraft tradition.

The graphics are very moodily painted in a duo-tone style in a crumbly colour-of-the-day brown - much like those older photographs found in everybody's attic. The game text changes every time it is played with another character, and there are many, many small features added which make the game even a little more personal to the particular character involved.

Although *The Hound of the Shadow* is not in the Barth's Tale mould, it is in every way as much an RPG, if not more so. The interaction level is superb, and rumour has it that if this is a success, more will follow with the ability to use your previous character(s).

Rik Henderson

# A SHEEP IN WOLF'S CLOTHING

Win a sword, care of those wonderful people at Audiogenic, in our Lone Wolf competition. Maim your neighbour, slice a friend...

**Y**ou too can be as barbaric as Herod Humpstead; as merciful as Rik Henderson, with a Live Role-Playing award made from foam (you don't want you hurting anybody now, do we? Do we?). This is the first prize in our Lone Wolf competition.

Also included as first prize are the two new Lone Wolf novels (signed of course). Four second prize winners receive the two signed books.

What you have to do is study the photograph to the right and think of some speech bubbles for what you think may have been said - the sillier the better.

Write them on the back of a postcard, at sealed envelope, and send them to:

Silly Buggers Compo, Your Commodore, Argus House, Boundary Way, Herod Humpstead, HP3 7ST.

Closing date: 31st September 1988.

#### The Rules

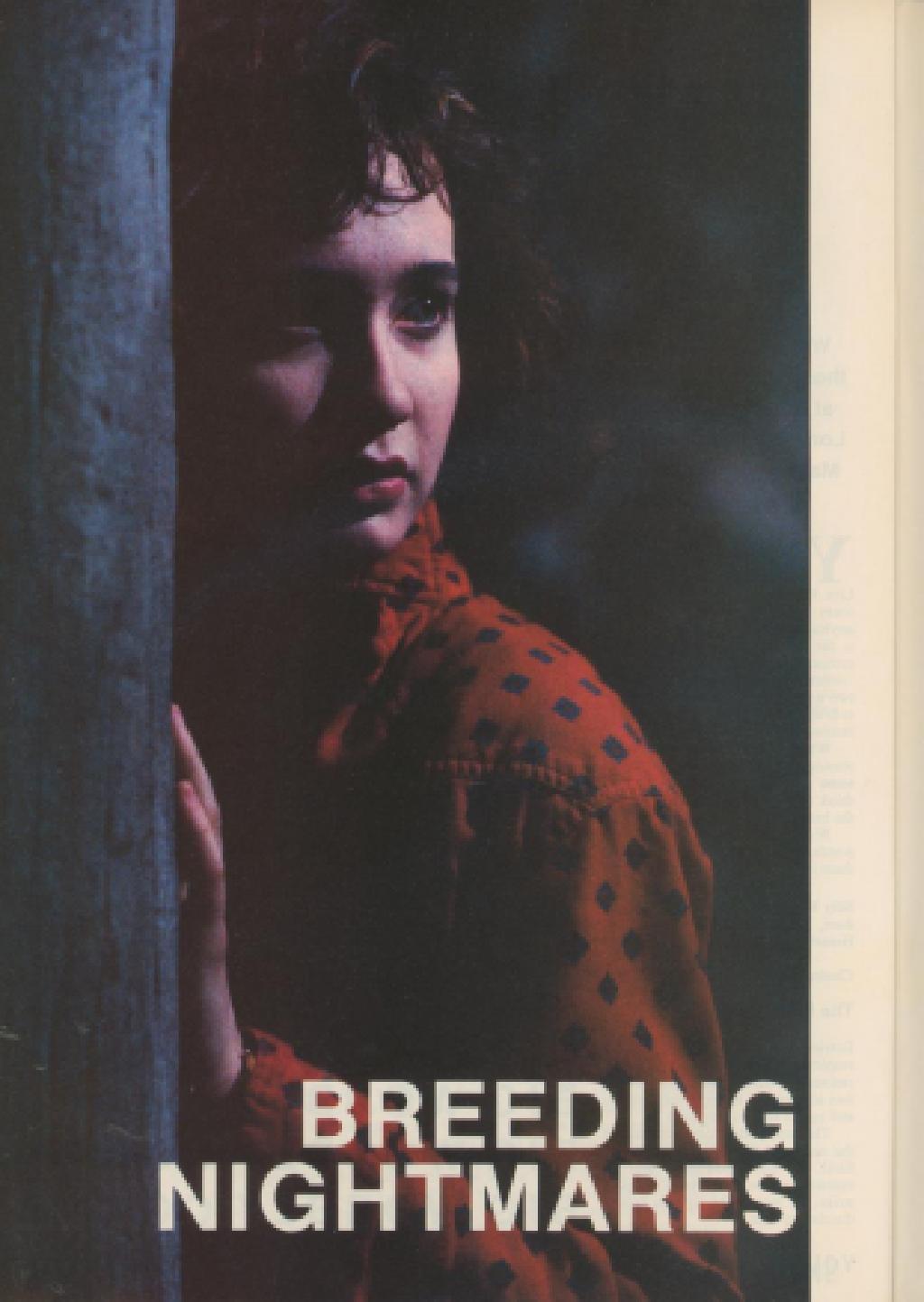
Entries will not be accepted from employees of Argus Specialist Publications, or Audiogenic. This restriction also applies to employees' families and agents of the companies.

The entry restrictions form part of the rules and the Editor's decision is final. No correspondence will be entered into. In the event of a postal strike, we reserve the right to extend the closing date.

BIG WOBBLY COMPO  
BIG WOBBLY COMPO



BIG WOBBLY COMPO  
BIG WOBBLY COMPO  
BIG WOBBLY COMPO

A dramatic, low-key lighting photograph of a woman. She has dark hair and is wearing a red dress with large black polka dots. Her gaze is directed towards the viewer, but she is leaning her head against a dark, vertical surface, possibly a wall or door, which obscures the left side of her face. The background is dark and moody.

# BREEDING NIGHTMARES

**Clive Barker's new film has a dark fantasy theme. Dave Hughes and Alex Blair talk to him on a very frantic, very elaborate, Pine-wood set.**

## Photography by Murray Close

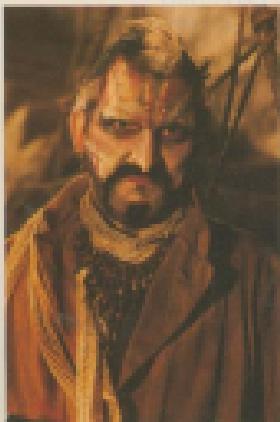
**C**live Barker, although a prize-winning and highly acclaimed horror writer, playwright, artist and general maverick-the-man among horror fans, it is without a doubt the film *HELLRAISER* for which he has earned himself most notoriety. A brilliant, stylish, complex collage of ideas, images, brutality, sexuality and death, *HELLRAISER* was Clive's directorial debut, a film made on a shoestring budget which has become the horror movie of the Eighties, establishing its central bad-guy, the Cenobites, as the new Freddy Krueger, Michael Myers and Jason Voorhees. A sequel has already been released in the UK, although Clive himself merely oversees the making of the movie, and there are plans for a third. Now Clive is working with a big budget, at a big studio, with big names and big stars. As he told me on the set of the new picture, *NIGHTBREED*, "*HELLRAISER* was a little horror movie; this is a big fantasy movie. *HELLRAISER* was one house in Cricklewood; this is five sound stages at Pinewood Studios."

*NIGHTBREED* is based on one of Clive's own novels, *CABAL*. It follows the story of Boone, an innocent but mixed-up man convinced by his psychotic psychiatrist, Decker, that he is a multiple murderer. Fearing the authorities, Boone discovers a lost city wherein reside all the rejected horrors of the earth and, having unintentionally lost his passage to the city, fights to save it from those who would destroy that which they don't understand... It is written by Clive Barker and stars *THE FLY*, *VIDEODROME* and *DEAD Ringers* director David Cronenberg and *HILL STREET BLUES* star Charles Haid. Clive says it is "much more than a horror movie", describing it as having "more heart, less red meat" than his earlier films. A dark fantasy movie, then? "Absolutely," says Clive. "There is a large action element to it, and no movie that stars David Cronenberg can be entirely safe for minors."

The set itself is a mixed bag, placed as it is between the famous BTI sound stage and the top secret *BATMAN* set. Canadian police cars and trucks litter the exterior locations, where Clive delightedly points out the exact spot of waste ground where one of Decker's more heinous crimes is committed (sorry, this is a fairly macabre). Impressive enough is the undeniably high wall of the city, Midian, which has been breached by the Sheriff (Charles Haid) and his men as I arrive. Talk is of a major scene involving a crashing jagernaut, which involves some tricking special effects, and Clive's air is of excited anxiety. Inside, elsewhere in the sprawling Buckinghamshire studios, the place is infested with every grotesque imaginable. *NIGHTBREED* is said to contain over two hundred separate monsters, with *HELLRAISER* special effects house Image Animation once more providing some astounding visuals and, working closely with Clive, ideas for the monsters themselves. I am asked if I am available to be another monster (they are either short or extra or make-up...) – in fact, Lucas Software's Gary Basar is already been signed up to play one of them during his research for the forthcoming computer game – but I decline and watch instead as Clive goes through the motions for another scene, before wrapping and sparing me some time over lunch for a chat.

His attitude is very clearly different to this film; he knows his finances will be watching closely, and it is important that the film does good business both here and in the States. Recent box-office successes in the fantasy genre (including *INDIANA JONES AND THE LAST CRUSADE*, *BATMAN* (see my article last issue) and *GHOSTBUSTERS II*) suggest that he hasn't too many worries. Two minutes of sheer bloodletting were cut from *HELLRAISER* II, and Clive seems reluctantly aware that his movie-making must mature, or at least change. "I've never thought it was that important to advance," he says. "But it is important to change, to do something different all the time."

Emphasis this time around is very much on characterisation, particularly of the four lead roles: Boone, his girlfriend Lori, Decker and the Sheriff. "It is scary, but no major scares come from genuinely caring about the people who are involved in that situation. I don't think the audience is gonna come out of this movie feeling detached about the characters, in the same way that they were detached from the *HELLRAISER* characters. *HELLRAISER* was a very cold picture; you couldn't really care for the characters." I ask him if working with David Cronenberg fed Clive's own vision of the movie, but he claims, *NIGHTBREED*, he says is not Cronenberg's style. "His vision is much grimier than anything in this picture, and although this is a dark picture in some respects, it is dark in a completely different way to the way he is dark. But it was wonderful to have him in the picture, partly because he is a hero of mine and partly because it was his first chance to do this. It's a massive role, and I think it comes across on the screen."





The latest news on the movie is that another six weeks' of filming is to begin at Pinewood, with Ralph McQuarrie (who designed much of the alien fauna of the *STAR WARS* movies) overseeing the ranks of the *NIGHTBREED*. More mutants are lined up, although a rumoured three-hour rough-cut has yet to be edited down to a more manageable two hours' worth, and although scheduled for release at Christmas of this year, the UK release is now to be nearer next Summer. In the meantime, Barker addicts can read his new bestseller *THE GREAT AND SECRET SHOW* (the first of The Art trilogy) and look forward to the sequel to *CABAL*, which, Clive says, will probably be turned into the *NIGHTBREED* sequel *HELLRAISER*. In screenwriter Peter Atkins' script for *HELLRAISER* III has been accepted, and Clive is already looking at a screenplay for another of his stories, this time *SON OF CELLULOID*, which appeared in both the *BOOKS OF BLOOD* and my own magazine, *SKELETON CREW*.

For Clive Barker, obviously, darkness is not an obstacle, but big business, the tapping of which is clearly his *Art*.

## NIGHTBREED - THE GAME

**C**live Barker's new film *Nightbreed* is to be realized by film finance experts, Ocean Software. This can only be judged as another brilliant marketing move by the company responsible for the *Batman* movie game (another superb license deal).

The game is to follow the plot of the film very closely (in contacts I've told not of

which Ocean is a world expert, due to the fact that its Public Relations manager was asked to make him screen debut as one of the Nightbreed).

Apparently, Clive Barker himself had a reasonable input into the game design, thus making it very accurate on the detail side. We have also been informed that it is to be more of an arcade game than anything

else.

As already explained in the main feature (what do you mean you haven't read it yet?), the plot of the film involves a character named Boone, who has been wrongly adjudged to have murdered somebody. Thus he goes on the run.

Unfortunately he runs too far, into the city of Midian - a land full of various nasties; the Night-

breed. Here he starts to change himself, lose one of the said creatures, and then it gets juicy.

Now that the movie has been rescheduled for an February release, the game has followed suit. It will be available on the Amiga and C64, and you can bet that it'll be every bit as horrific as its cellular counterpart.

Kia Henderson

"Ocean software's Gary Bracey has already been roped in to play one of them (the *Nightbreed*)..."



## ■ 128 CORNER

Dear 128 Corner,

Congratulations on the new C128 Corner. The article is a great idea, I hope it is a success. Here are a few hints and tips for you.

For a secret message from your 128 corner: ST532888, 123, 48, 8

POK34784, B: POK34785, 288 will increase the size of characters on 80 col. screen (may not work on all versions of 128).

128 partitions can be accessed from *Resource 128* by sending the disk command /partition name.

When using Micro Craft 128, pop-up menus can be moved around the screen using the TAB key.

Graphics created on CADPAK 128's second screen can be used with Resource by loading them into the converter as a hi-res picture.

I hope that these will be of some use to you.  
P. Traynor, Warrington, Cheshire.

Dear 128 Corner:

I am looking forward to reading articles about the C128 in the new 128 Corner. The following questions may be of interest to other readers, in addition to myself.

What Pico Software is available for the C128 for Word Processing, Databases and Spreadsheets.

What officially does CP/M stand for. And what range of software has one used and is available.

Is it possible to switch from the C64 mode to the C128 mode and vice versa with a cartridge installed without damaging your computer.

I look forward to your reply in the pages of YC.

J. Bradley, Lancashire, England.

Two Visa products were launched for the C128. The first of these was Visa Classic, a very powerful wordprocessor and a favourite in the office. The second program is Visa Stat. This program offers both database and spreadsheets functions, while not as pretty or friendly as Visa Classic it is still a very powerful program. By Financial Systems Software if you are trying to track these down.

CP/M stands for Control Program for Microcomputers. Basically it was the first answer to MS-DOS/PC-DOS and the version of CP/M found on most IBM compatibles. CP/M allows programs written for the 8080 & 8088 to run on computers.

There is a fragmentation of CP/M software available - mostly professional business applications, unfortunately there is too much to list here.

If you want to investigate CP/M software further we suggest you take a look at the CP/M Kit and the CP/M Users guide. Both of these are available from Financial Systems Software.

You could also try contacting the CP/M Users Group at: 72 Mill Road, Duxford CB1 7RE.

Most cartridges are designed for the Commodore 64 computer and will not allow you to access the C128 while they are plugged in, they will start up the computer in C64. The only cartridge that we are aware works in C128 mode is the Warp Speed one, like just about everything else is available from Financial Systems Software. Switching between C64 and C128 mode while a cartridge is plugged in, if the cartridge allows it, will take no problem.

Dear 128 Corner,

I like the C128 pages in YC. Could you mention in them that the C128 version of Supersoft's WordStyle, formerly called Word Perfect, has now been modified to correctly underline when used with Commodore's own diskbased printer, DPS1101. I solved the problem for them, and they sent me a very nice gift in return. Word Style works in either 40 or 80 columns. It has two work areas, between which text can be transferred. As easy to learn basic word processor, it's good value for £29. Anyone with C64 or Plus/4 Word Perfect files can load them straight in to Word Style 128.

P. Simmonds, Skegness, Lincolnshire.

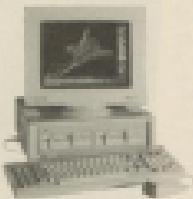
Thanks for your letter, and the free plug for yourself. Hope that your comments will prove beneficial to some users out there.

Put pen to paper and tell us your news, views and opinions

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# I·C·P·U·G

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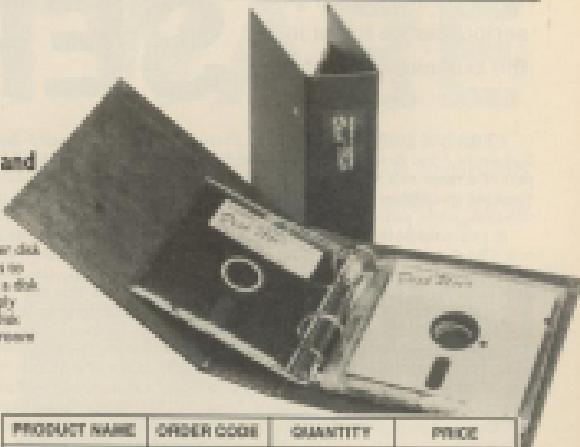
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  - We support all Commodore Machines old and new, PET, VIC20, 64, 128, +4, PC, 138 and all AMIGAS.
  - Free Software Library of public domain programmes for all the above machines available to members on supply of blank disk or tape and payment of p+p. New members, do not send for this until membership number is received.
  - Help and Advice
  - Discourse scheme
  - Subscription only £15 per year [UK] plus £1 postage for overseas rates on application.

If you are seriously interested in using or programming any Commodore computer, then joining ICPUG is a must.



**KCPG Membership Secretary, Jack G. Cohen,  
30, Bramerton Road, Newbury Park,  
West, Essex, EC2 7JF.**



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**R**egular readers of *PCW Computer* will know that there's more to C64 computing than blasting aliens and solving adventures. In the next few pages we'll explore exactly what your C64 can do and what hardware and software is available to help you. First we'll look at the Soft Options of the programs you can run and then at the Hard Facts, which is the extra hardware you'll need to buy to get the most out of Commodore computing.

### Soft Options

**W**ord processing utilities top most polls of computer applications and the C64 has its fair share. These range from the cheap and cheerful to the multi featured. At the top end of the scale Word Writer 3, available through F.S.S.L., costs £89.95 but includes an 100,000 word spell-checker, a Thesaurus to ensure you always choose the right word and an outline utility to plan your writing through a series of nested headings before you begin. The cheapest word processor is probably Logotron's Writer 128S that logically costs only £12.95 but includes a spell checker even though its operation is strange and slow. Before you buy a word processor think about what you're going to use it for as common uses range from letter writing to magazine articles (even books), and buy one suited to your needs.

Other word processors worth considering are Super Script and PaperClip.

If you're thinking of producing a club newsletter, or report including graphics and charts, then a DTP system will help considerably. For the C64 there are three main commands: GeoPublish, PaperClip Publisher and Stop Press. As with many packages each has its own strengths and weaknesses. Stop Press, from Database, is supplied complete with a three-button mouse and is controlled by icons, but has a very limited selection of typefaces. PaperClip Publisher is very good but only supports the PaperClip word processor which reduces its value. Finally, GeoPublish is a little slow to use but, through a text grabber, you can incorporate text files from any word processor into your pages, and can also use any GEOS font and graphics from programs such as Print Shop and Neuronsoft.

**Tony Hetherington gets serious as he looks into the business side of the C64**

# SERIOUS

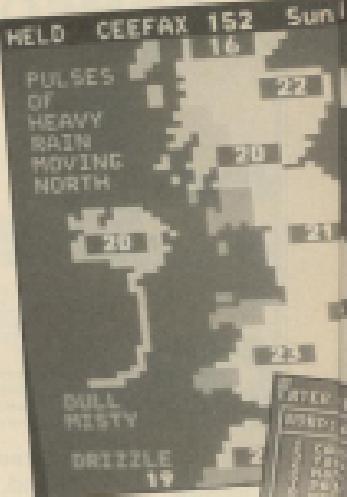
GEOS - a disk operating system devised by California based Berkeley Software - has developed into a comprehensive system. GeoPublish is only part of a range that includes the GeoWrite word processor, GeoFile database, GeoCalc spreadsheet and GeoChart graphing utility. The whole system uses windows, icons, pull down menus and a joystick or mouse controlled cursor.

If you want to store and retrieve data then Superbase is still one of the best C64 databases. The Precision Software package can store and sort year data, perform calculations based on it and store the answers. One function of a database is to provide a list of names and addresses that can be used with a mailmerge utility, supplied with most word processors, in order to send out a letter to everyone on your mailing list.

They say a picture is worth 1000 words and if you want to create masterpieces using your C64 screen as a canvas then there is a wide range of packages to help you. Perhaps the best is the OCP Art Studio which was published by Radioshack. However, now Microsoft has bought Radioshack, OCP bought its package back and then sold it to Data Electronics. Luckily the program isn't an continue and it now represents excellent value for money. The new Data Art Studio offers bundled the package with a 100 mouse, mouse mat and mouse holder for only £29.99.

With the addition of a modem, your C64 can become a gateway into the worlds of bulletin boards and online services, such as CompuNet, that offer its users pages and pages of sample art, programs, and information at the press of a few keys and a BT phone socket.

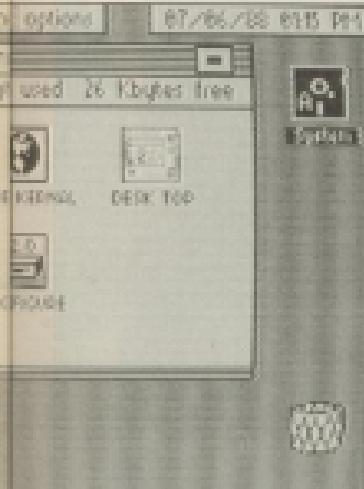
Finally, you can add a network adapter to your C64 to view, store and read pages of information from CompuNet and Oracle services. These not only contain daily TV listings, weather and travel details, jobs and recipes but



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# S SOFTWARE



also the latest news, sports results and stock market prices. This becomes particularly useful if you're planning on using programs such as price predictors, as a utility is supplied to read the screen buffer and will allow you to use the information in your own programs.

## Hard Facts

### Disk drives

Unless you're a glutton for punishment, or you actually enjoy long loading times, you'll need to invest in a disk drive. There are a number on the market, including Commodore's own. One of the best buys is the Amico Micro Domestic drive which is a shrink drive, is fully compatible with Commodore's and comes free with GEOS. Expect to pay about £130 for a drive but look out for special offers.

### Printer

A good printer is essential if you want to get the most out of applications such as word processing and desktop publishing. These range from low cost Epson, Saw and Mannesmann Tally dot matrix printers to laser technology. The Star LC-10 C is particularly fun as it is not only a good black and white work horse it can also print out full colour images created by art packages.

### Graphics tablet

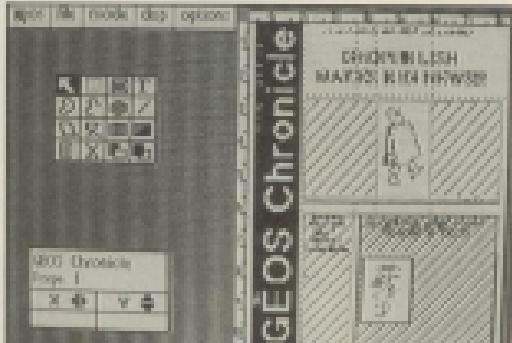
If you're really serious about C64 graphics and you've tried and dismissed joysticks and mice as electronic paintbrushes then why not invest in a graphics tablet. These are ideal for tracing in outlines of objects and pictures into a package and also make working with fine detail a lot easier. If you want the best then lookout for the Koala Pad as it's supported by most art packages.

### Teletext Adapter

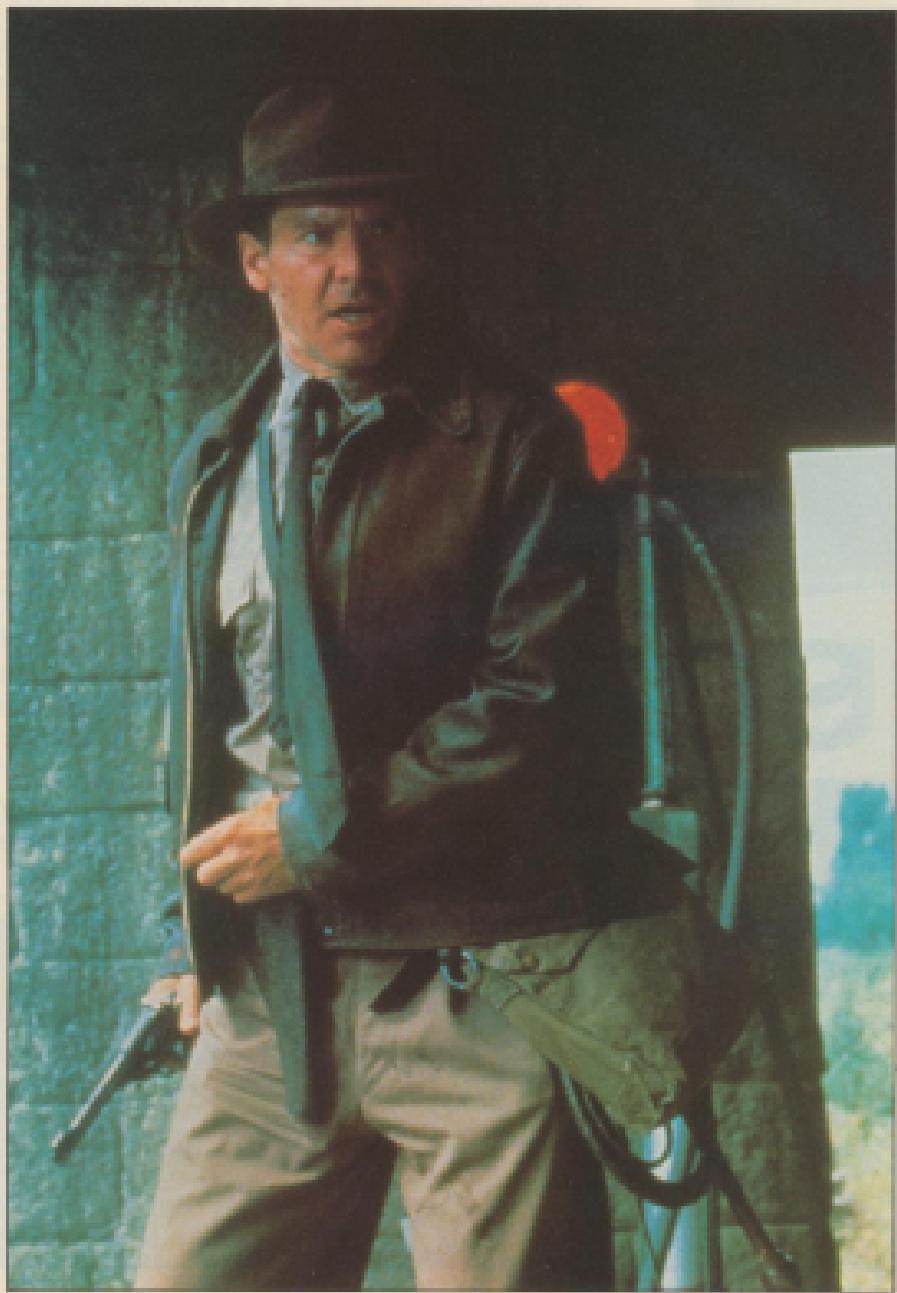
Microtext produces a very reasonable teletext adapter that can either use a video recorder or tuner (supplied extra) and plug into the C64's user port. It has a cable that connects to the video out socket of the video recorder and can even be in a different room.

*"Stop Press, from Database, is supplied complete with a three button mouse..."*

Above and left: GEOS, an system for every site.



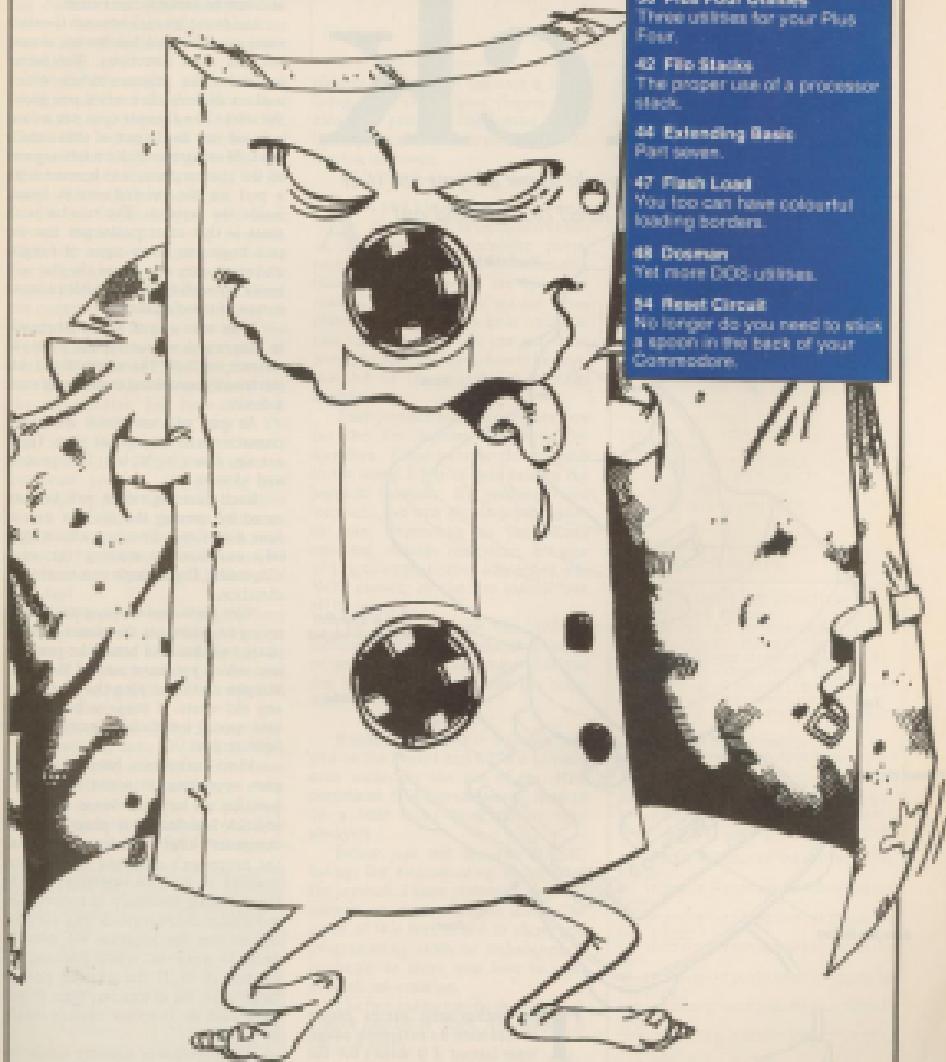
■ FEATURE



Thirty

YOUR COMMODORE

# YOUR PROGRAMMER

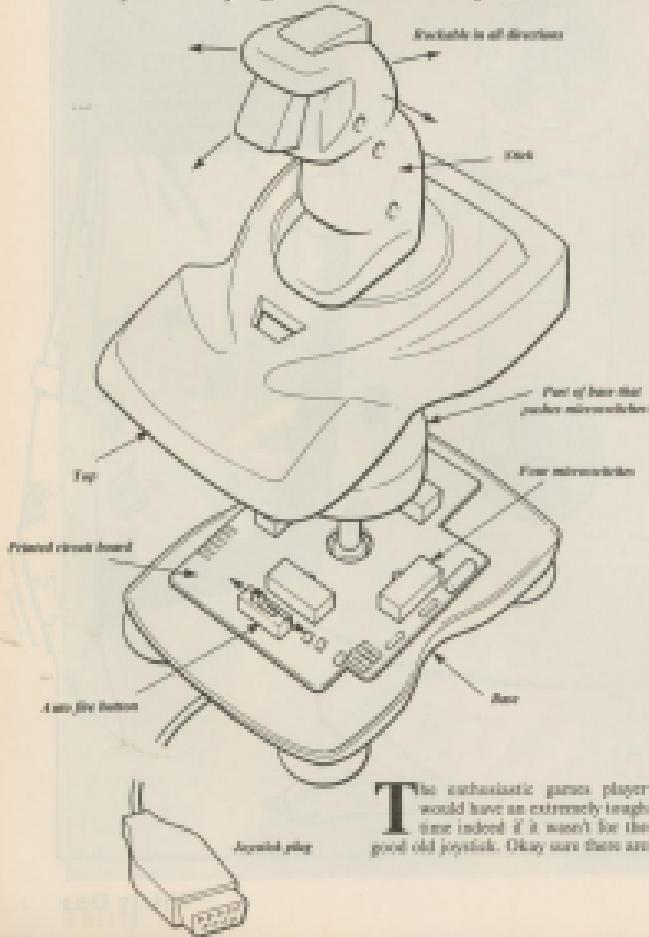


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No longer do you need to stick a spoon in the back of your Commodore.

# Give it some stick

*Just how does a joystick work? How do you use it in your own programs? Read on and find out*



The enthusiastic games player would have an extremely tough time indeed if it wasn't for the good old joystick. Okay sure there are

games that do not require control from such a device, but, for the shooting-up game there is just no substitute. But how do they work?

We all know what a joystick looks like; basically it will have a stick with a fire button or buttons, a base, a lead and maybe an auto-fire switch.

Inside the joystick beneath the stick there are four switches for up, down, left and right directions. The better joysticks use microswitches which make a definite click when you move the stick. The cheaper ones use a four pointed star made out of thin tensile steel. Moving the stick causes a point of the star to come into contact with a pad on the printed circuit board inside the joystick. The trouble with these is that after prolonged use the star begins to show signs of fatigue and eventually a point of the star will break off making it impossible to move in one of the directions.

If we take a look at the schematic in diagram 1 of our typical joystick, we can see how the components are electrically connected to make up such a device.

As you can see there are seven connections to the joystick plug. These are up, down, right, left, fire, ground and +5 volts.

Each position switch will be activated by moving the stick in one of four directions. You can also trigger two switches by moving the stick diagonally, for example in a northwest direction.

Now the computer program will be trying to determine the status of these latter switches and hence the position into which you have pushed the stick, but you can't just plug the joystick in any old where. It needs to be plugged into special interfacing circuitry via a joystick port.

Most computers have a joystick port appearing at some convenient position on its case. Some require a joystick interface that plugs into the computer's edge connector which has the processor's data and address bus running to it. This interface will do the decoding necessary to convert the movement of the joystick into the data signals that the program will need in order to work out which position the joystick is in. If the joystick port is built in to the computer, then it will have such an interface already inside it.

The interface or circuitry inside the computer will look something like

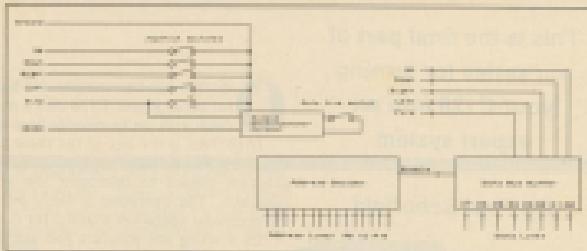
diagram 2. We have the address decoder chip and a data bus buffer. The address decoder is needed to read the status of the switches in the joystick at periodic times, that is, when a specific unique address exists on the address bus and at no other time. If we did not do this then we would have all sorts of unnecessary data on the data bus, which would cause the computer to lock up.

When this unique address comes along it will force the decoder to issue an enable signal to the data buffer. This buffer will then put the status of the joystick switches onto the data bus of the computer circuitry ready for the program to read and act upon.

Let us imagine that you have moved the stick to the up position. This will cause the signal on the up line to go low (to ground). When the data buffer is enabled this will cause the output on D0 to go low, or in other words to be set to zero. The data bus would then have a binary value of 1111110 (decimal 394). The program would look at this value and know that the up position has been selected. Similarly if we push the stick to the right then we would have a binary value of 11110001. If we select a northeast position, this means that switches up and right will be active which will put a binary value of 1111000 on the data bus. Likewise pressing the fire button will cause D1 to go low thus obtaining 11110001. Get the idea?

The program will then, at very frequent intervals possibly during an interrupt routine, be working out the status of all the joystick switches and taking the appropriate action upon its data bus findings.

As mentioned earlier, some joysticks have an auto fire switch. This brings in to play a simple multivibrator circuit which uses a continuous series of pulses at about 10 per second (each pulse initiating the fire button). This is basically a luxury for those people



playing a game that requires a lot of firing, thus saving your fingers from having to press the fire button all the time. The multivibrator uses the +5Vdc line for its power.

Well that's about all there is on

**A**s you are aware, the Commodore family of computers each have two controller ports, numbered one and two. Normally these controller ports are used for reading the joystick or mouse when playing games. With a little imagination on your part, you can use these ports for gaining input from the user, instead of the normal keyboard method.

Each joystick has five switches, one for the fire button, and four for direction. These switches correspond to the lower 5 bits of data held in the joystick location. By picking these locations, we can decide what action to take, depending on the values returned. Always remember, a value of 1 signifies that either a direction was NOT chosen, or the fire button was NOT pressed.

The table shows the values returned for each direction. A value of more than 128 indicates that the fire button was pressed at the same time.

Reading the ports is a simple job, and on the Plus/4 and C128 it is made even easier by the use of the JOY1 command. C64 users however, have to do a little more work (Don't they always?).

Below you will see two BASIC listings for determining the state of the joystick. I have purposely kept the listings on a very simple level. The point of this text is not to show you programming skills or techniques, it is simply to show you how to read joystick information.

The first listing can be used by both Plus/4 and C128 users. The second is for C64 users.

joysticks. Once you've seen one you've basically seen them all, except that some are designed better for prolonged use and comfort and some are designed better for fast action. It really is a personal choice, so try before you buy.

#### JOYSTICK INPUT

```

10 REM JOY1 VARIABLE
20 REM 160 FOR JOY1
30 REM 161 FOR JOY2
40 REM 162 FOR FIRE
50 REM 163 FOR LEFT
60 REM 164 FOR RIGHT
70 REM 165 FOR UP
80 REM 166 FOR DOWN
90 REM 167 FOR FIRE
100 REM 168 FOR LEFT
110 REM 169 FOR RIGHT
120 REM 170 FOR UP
130 REM 171 FOR DOWN
140 REM 172 FOR FIRE
150 REM 173 FOR LEFT
160 REM 174 FOR RIGHT
170 REM 175 FOR UP
180 REM 176 FOR DOWN
190 REM 177 FOR FIRE
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220 REM 180 FOR UP
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240 REM 182 FOR FIRE
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260 REM 184 FOR RIGHT
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This is the final part of  
our series for turning  
your C128 into an  
expert system

By Paul Schofield

**R**over the last two months, we have been providing you with the means for turning your C128 into a mini-expert system. The first two sections dealt with the knowledge base and language generator. EXPERTWFL is the last of the three programs making up our expert system shell. Once your expert system has been fully coded, EXPERTWFL is the only program needed to integrate the knowledge base and evaluate the user responses. The operation is fairly self explanatory, but some knowledge of the programs operation is useful for designing and tuning your application.

On starting the program you are first required to identify the knowledge base to be used. Once this has been done the target tests, condition tests, relation rules and implication rules are loaded into a set of arrays. The master array is the relation-rules array, which defines the operations to be performed and includes the necessary references for extracting information from the other data structures.

Before questioning the user, the program first displays any help text defined in the knowledge-base global background information for the type of the knowledge base etc. If this is longer than a single page, it is displayed a page at a time and the user indicates when the next page is to be displayed.

After this a standard help text on preceding questions is displayed. For each condition, it is permissible to answer *yes/no*, *Don't Know*.

The program then executes the *solvable* rule-body-sharing at the entry for target 1. It states each condition for the target and unless the condition is irrelevant for this rule, the user is asked to answer the condition question. The answer is saved and evaluated to determine whether it is the required result for the target. If it is, the program continues with this target, otherwise it marks the master for abandoning the target and continues with the next target. There are two reasons why a target may be abandoned; either it is rejected, because a part of a condition has the wrong value or it is simply abandoned because of a *don't know* response. It is important to note that a *don't know* does not rule out a target, it is simply ignored during the first pass, as there is no path a solution that does not depend on the result of the particular condition.

After each condition is tested a further check is performed to see if any other conditions are implied by this result and the aggregate results for these conditions set. This means that as the inference engine proceeds through the scan of targets and conditions, it finds it already has the answers to an increasingly large number of conditions and so doesn't have to ask the user.

Hopefully, if *Don't Know* answers have not been given, a *relation rule* for a target will be satisfied. At this stage a subroutine is called, which displays the possible solution and gives the user the option to exit from the program or continue searching for further solutions. A further option - *(Why)*, is also provided.

### Why?

The *why* option allows you to request a justification for the solution. What it does is to back-track through the targets and significant conditions processed to date and explain the actions it took. This is extremely useful for debugging a knowledge base and is also useful to the end user who wishes to examine the reasoning used to reach the solution. Where the expert system is used for categorizing and a new category has to be introduced this can give a useful clue to the new condition required and which targets are affected.

### No (More) Solutions

Alternatively, a *More* response after a solution or a number of *Don't Know* responses can cause the inference engine to exhaust the list of targets. At this stage the user is informed that no or no more solutions could be found. The option to try again is given if any *don't know* answers were given. This causes a complete reassessment of the data to be performed. This time the *don't know* response only affects the current rule, so that if the same unknown condition exists in several rules and no clear answer is given it will be asked repeatedly. This means that the retry is very tedious and there is no point

in requesting this unless at least some don't know conditions are going to be answered.

### Applications

Having already typed in these programs, it may seem a little late to be asking what use is our expert system shell. For the home user, however, expert system applications are far from obvious, so it is quite useful to consider a few areas of potential use and also some considerations for constructing a useful knowledge base.

One very obvious application for the home computer user is a program design aid, indeed I originally developed the functionality of the reason program to assist in developing my *Bridge Master* program. Good bridge players, who have used the program will no doubt have noticed a slight bias in the pegging strategy with certain types of hand. This is a result of posing the question "what card maximises the scoring possibility?". A more correct approach would have been to ask "which is the least disadvantageous card to play?" In most cases the answer is the same and once the algorithm was coded and problem noticed, it would have required a major rewrite to correct a minor shortcoming.

Presenting the strategy in HAL format is very much simpler and quickly highlights oversights.

General categorisation applications are also easily handled, as are guides to procedures, such as an extended version of the chemical analysis example or the inevitable car maintenance. Some care is required in the latter of these uses as the order of both the targets and conditions can be quite critical to the usefulness of the system produced. The reason program can be quite helpful in solving unanswered these problems. In some generalised applications, it could prove to be a problem that both targets and conditions have to be expressed in terms of text strings. A typical example is a solution, that is built up as a result of several rules being true. This tends to be a problem of many general purpose expert system shells, as what is really required is for a satisfied rule to trigger an action, which contributes to the general solution. This is, however, a disadvantage, if a single unique solution is sought. Such applications can, however, be handled by planning for multiple solutions and noting each target solution found and always continuing to look for further solutions.

The final application area that should be mentioned is education. The question and answer technique is quite a good way of illustrating to children how to approach various types of problem.

*Figure 4* illustrates a simple knowledge base for identifying mathematical shapes. This also demonstrates how to use implies to reduce the numbers of questions asked and also shows how multiple solutions can be useful. In this case looking for additional solutions will demonstrate that a square is also a rhombus, a rectangle and a parallelogram.

### Is our expert system shell intelligent?

It is still a subject of great debate as to what constitutes Artificial Intelligence. Some would argue that all programs are intelligent, whilst others would claim that no qualify, as programs must mimic human intelligence. It is primarily the function of an expert system shell to provide a sensible strategy for evaluating the rules of the users system. It's the presentation of the rules by the user, that will determine how intelligently the particular system will respond. With *PROGETIVE* I have deliberately left as much control as possible to be convenient for the applications in which I use it. This means that the order in which both targets and conditions are defined is critical to the performance of the finished system. In most applications, however, it is only the order in which the targets are examined, that is of any concern to the user and it would be preferable if the conditions were examined in the most efficient order. In other words the inference engine includes the intelligence to decide the best order to evaluate the conditions. One such strategy can easily be incorporated within *PROGETIVE*.

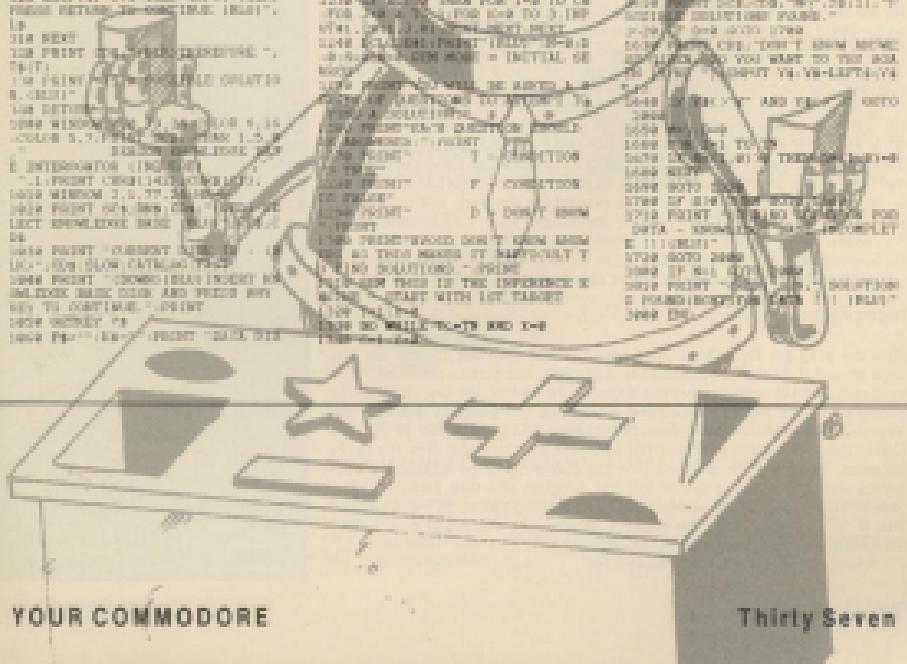
After displaying the help texts, call a subroutine, which scans the relations

array *rj* by condition number and computes counts of the number of targets affected by each condition. These counts are then sorted to produce an array *pj*, such that *pj(1)* is the number of the most used condition and *pj(10)* is the least used condition. The following changes are then needed in the main program:

```
1540 p=1:y=0
1550 do while p = 10 and y=0
1555 end(p)
1560 p=p+1
```

The only slight complication with doing this is that in computing the counts, implied conditions should also be taken into account. Otherwise it is possible that the revised evaluation strategy may prove less efficient than the original one, and that's not intelligent.

END IF	10 END IF AND > 10000	10 = 1 2 3 4 5
* POLYLINE ANALYSIS DATA	10 THE SHAPE AND S EQUAL	10 = 1
* DESCRIBED SIMPLE POLYLINE POINT N	10 THE SHAPE AND P NOT EQUAL	10 = 1 2
* DESCRIPTION OF SHAPE CHARACTERISTICS N	10 THE SHAPE AND S EQUAL	10 = 2
END IF(IF	10 THE SHAPE AND P EQUAL	10 = 2 3 4 5
END IF(IF	10 THE SHAPE AND S EQUAL	10 = 3
END IF(IF	10 THE SHAPE AND P EQUAL	10 = 4
END IF(IF	10 THE SHAPE AND S EQUAL	10 = 5
END IF(IF	10 THE SHAPE AND ALL THE SAME LENGTH	10 = 1 2 3 4 5
IF AN IRREGULAR POLYLINE	10 TWO EDGES ARE THE SAME LENGTH	10 = 1
IF AN IRREGULAR POLYLINE	10 ALL POLYLINE ARE EIGHT EQUAL 100	10 = 1 2 3 4 5
END IF(IF	1000000000	10 = 1
IF A PARALLEL	10 THE OPPOSITE EDGES ARE ALL PARALLEL	10 = 1 2 3
IF A PARALLEL	10 TWO EDGES ARE PARALLEL	10 = 1
IF A PARALLEL	1000000000	10 = 1 2 3 4 5
IF A PARALLEL	1	10 = 1
IF A PARALLEL	RELATIONS	10 = 1 2 3 4 5
IF A PARALLEL	10 = 1 2 3 4 5	10 = 1
IF A REGULAR POLYLINE	1 = 1	
11 = POINTS	1 = 1 2 3 4 5	
12 = REGULAR RELATION	1 = 1	
13 = RELATION	1 = 1 2	
14 = REGULAR RELATION	1 = 1	10 = 1 2 3
15 = RELATION		10 = 1
16 = REGULAR RELATION		10 = 1 2 3 4 5
17 = RELATION		END RELATIONS
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# Plus/4 Utilities

We present three basic but very useful utilities for the Plus/4 and C16.

By D. Glass

**O**ne thing that every Plus/4 owner knows, is that we are constantly being ignored by software companies and magazines. Between them, these pillars of the computer industry, are trying to squeeze us out, just as they did with poor old VIC20 users. But, thanks to magazines like *Your Computer*, we shall overcome. I have decided to present you with 3 simple, but nevertheless, useful routines for our humble machine. The routines are: *Screen*, *1311 head clean* and *1311 delete*.

## References

This handy little routine is particularly useful to those without Script/Plus. The routine will read sequential ASCII files made by Script/Plus, Super Script, Superbar and should read files from most word processors (including 1-2-3, but with strange results.) As it is written in BBC it can handle the speed of a 1.44M disk drive and will display "pages" very quickly.

## How It Works

We start at address \$1000 so that the program can be run from Basic, after setting up the screen display by changing colours and using the *LINES* routine at \$112E to draw two lines across the top of the screen and by using the *ADDELT-WRITE* sub-routine at \$1009 to write *LST74*, the program now waits for the file name to be input. As the name is entered, it is stored in the tape buffer (\$0000) until a carriage return is entered. ".S.R." is then added to the file name. The program will try to open the file and checks the *STATUS* (\$0040). If no file is found then the program will jump to the no file routine at \$109B and carry through to the end routine at \$000F.

If the file is found, then the **READ** routine (\$1080) is used to output the file contents to the screen, as it does so it will check to see if screen line 20 is empty, if not then a jump to the **PAUSE** routine at \$10CD is made. This will finish the current word by looking for a space and pause the program until an option is selected. Pausing is done by using **INTALK** and **LISTER** is output to the screen. Once a key is pressed the program will either jump to the end routine at \$108F or clear the screen, send TALK to the device and return to the **READ** routine at \$1080, so continuing to read the file until the screen file again or the file ends.

If `read` is selected the program can be re-run to read another file.

## Instructions

Run the program from Basic. The program will then ask for the file you wish to read, type this in (you can use wild-cards and pattern matching.) You need not add the usual sequential codes at the end of the file name as the program will do this for you. Press return and the program will look for your file, if it does not exist then the program will inform you of this and finish, check the spelling of your file using the directory and then re-run the program. When the file is found then the contents will be displayed on the screen until the screen is nearly full, the program will then pause to allow you to finish reading the screen. Press "y" to continue or "q" to quit this file, if "y" is pressed then the screen is cleared and the program will carry on until the screen is full again or the file [finishes].

Re-run the program to read another file.

#### **PLUS/4 PROGRAM**

Getting It In

Type the following exactly as shown, check before pressing return.

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This will raise BASIC, giving space for the M/C Load and run the Basic loader.

If all is well then the program will say so. If it is, then enter the MONITOR and type the following:-

中国文哲系博士后流动站

Where Dell for disk or I for tape.

The new program *STORICA D* will be used.

Reset the computer or if you have more than one of my routines then type F 1000 FF00 (RETURN) to clear the work space then type X to return to Basic, type NEW (RETURN) and you are ready to load the next BASIC loader.

#### **1551 Head Cleaner**

This is an essential program for the [33] user.

When the drive head is too dirty to read a disk, cleaning usually requires keeping a cleaning disk spinning for about thirty seconds. This program (feel no tape for obvious reasons!) will spin your disk for you.

## How It Works

The program is in M6C to keep loading time to a minimum. We start at address \$1001 so that the program can be run from Basic, after setting up the screen display by changing colours and using the *LINES* routine (\$1009) to draw two lines across the top of the screen and by using the *MULTI-FROM* sub routine at \$10C9 to write *LSDA*. The section at \$0043-\$004C will set the top of a screen window just under the two lines, the program now waits for the user to insert a cleaning disk and confirm that fact using the keypress routine at \$1059.

When ready the program will set up a counter of seven, and send an **INITIALIZE** command to the disk drive, resetting the drive and therefore spinning the disk, after resetting has occurred the program will decrement the on-screen counter, checking that "0" has not been reached, and send another **PIECE** until "0" is reached. This takes about thirty seconds. A sub-routine will check to see if the letter **N** has been pressed, if so the program will branch to **END (S1898)** which will close the channels and return to Basic. If the counter reaches 0 without interruption then the channels will be closed and the program stopped.

## Introduction

Run the program from Basic. The program will pause for you to insert a cleaning disk. Press "y" when you are ready and the count down will begin. If for any reason you need to stop the cleaning then press "n" and the program will stop, close the channels to the disk drive and return to Basic.

#### Type B1B2 in red

Section 11

Book needs to be turned in SIGHT before leaving the basic leader.

Type the following words as shown, check before proceeding.

This will raise Basic, giving space for the M/C Load and run the Basic loader.

If all is well then the program will say so. If it is, then enter the MONITOR and type the following:

#### **PLUS/4 РЕВОЛЮЦИЯ**

## S<sup>7</sup>1551 HEAD CLEAN"J,D,1981,11CP

Where D118 for disk or J for tape.

The new program *1551 HEAD CLEAN* will be used.

Reset the computer or if you have more than one of my routines then type F 1980 1FFF 00 (RETURN) to clear the work space then type X to return to Basic, type NEW (RETURN) and you are ready to load the next Basic loader.

## 1551 Device

Do you have more than one Disk Drive?

Many people do not like opening up their drives and cutting jumpers etc. in order to access the second drive.

A short, quick MC program will do this for you. It was especially written for the 1551.

## How It Works

The start is at address \$1980 so that the program can be run from Basic, after setting up the screen display by changing columns and using the "LINES" routine (\$1098) to draw two lines across the top of the screen and by using the *MULTI-WRITE* sub routine (\$10C6) to write LISTA, the program now uses the *INPUT* routine (\$1096) to ask for the device number required and will compare the input to "2" and "3". If neither then a loop is made. The routine will jump to one of two routines, *INPUT* (\$10B6) *RINA* (\$10A) to select the number before passing to *OPEN* (\$10B8) to send the command to the drive, closing the command channels before printing *LISTC* (\$1150) to the screen, telling you that the number has been changed.

## Instructions

Run the program from Basic. The program will pause and tell you to switch off all of the drives that you do NOT require changing.

Switch off and confirm this by pressing either "1" or "2" as required.

The drive will now be changed and the program will returned to Basic.

## Getting It In

Basic needs to be moved to \$2000 before loading the Basic loader.

Type the following exactly as shown, check before pressing return.

**POKE 44,J2,POKE40,J,POKE8182,1NEW (RETURN)**

This will raise Basic, giving space for the M/C. Load and run the Basic loader.

If all is well then the program will say so. If it is, then enter the MONITOR and type the following:

## S<sup>7</sup>1551 DEVICE NUM"J,D,1981,11

Where D118 for disk or J for tape.

The new program *1551 DEVICE NUM* will be saved.

Reset the computer or if you have more than one of my routines then type F 1980 1FFF 00 (RETURN) to clear the work space then type X to return to Basic, type NEW (RETURN) and you are ready to carry on working.

# Filo-Stacks

*Get to grips with the First In Last Out format of the Stack.*

By Steven Burgess

**A** stack can be described more simply by using an analogy. If you have a tower of building blocks, a stack of building blocks, you can only take blocks off the top and you can only put blocks on the top, if you try to take a block from the bottom of the pile (brick) then it will fall down, it is impossible to put a block on the bottom of this pile without first lifting it. The same rules apply to stacks in computers, data can only be put on the top of a stack and taken from the top. The acronym FILO describes this, it stands for First In Last Out. The first item to be put on is the last to be taken off, and the last item to be put on is the first to be taken off.

SP	CONTENTS	LOCATION
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	

SP	100
	101
	102
	103

STACK POINTER = 0

DIAGRAM 1.0

SP	CONTENTS	LOCATION
SP	1021	1
		2
		3
		4
		5
		6
		7
		8

STACK POINTER = 1

DIAGRAM 1.1

## 1. Data to push.

When you enter the data which you want to push the stack pointer is increased by one, the data is then PUSHED onto the location indicated by the stack pointer and you have finished. The same process is executed every time you push to a stack.

Let's pretend we have set up an array, in BASIC, as a stack, there is, currently no data stored therein. The stack pointer is pointing at location 0 (see diagram 1.0), let's enter a value, 1021, we increase the stack pointer by 1 and store 1021 in location 1 (see diagram 1.1). Entering another value, 1022, causes the same process to occur, except the stack pointer now because 2 (see diagram 1.2).

## Pushing!

**T**he process of adding items to a stack is called pushing, you push a piece of data onto the stack. The actual programming of this is very simple. In order to push data onto a stack you must have a number of things:

1.A stack. (can use an array in BASIC)

2.A stack pointer.

CONTENTS	LOCATION
1021	1
	2
	3
	4
	5
	6
	7
	8

STACK POINTER = 2

DIAGRAM 1.2

SP	100
	101
	102
	103
	104

STACK POINTER = 3

CONTENTS	LOCATION
100	1
	2
	3
	4

STACK POINTER = 4

DIAGRAM 1.3

## СТАРЫЕ ГРАМ

the last item to be pushed), to be taken off the stack (popped) the stack pointer is then decreased, pointing at the item which was pushed before the previous one.

We shall now pop an item from the stack described above (see diag. 1.2), to pop we simply read the item which is stored in the location indicated by the stack pointer. The stack pointer contains 2 as the item we pop is stored in location 2. The item is 038, we then decrease the stack pointer by 1 so it becomes 1. Popping again gives us 031 and empties the stack. The stack is empty when the stack pointer is 0. The stack is full when the stack pointer is equal to the number of elements defined in the area.

The program "STACK DEMO" demonstrates popping & pushing to the full. Type in the program using the syntax checker. Save it to DISK/TAPE and type RUN [RETURN].

On execution you will be presented with a graphical representation of a stack on the left hand side of the screen, the stack has room for 20 elements, on the right hand side of the screen is a menu. The options are as follows:

- 1.POP  
2.PUSH  
3.EXIT

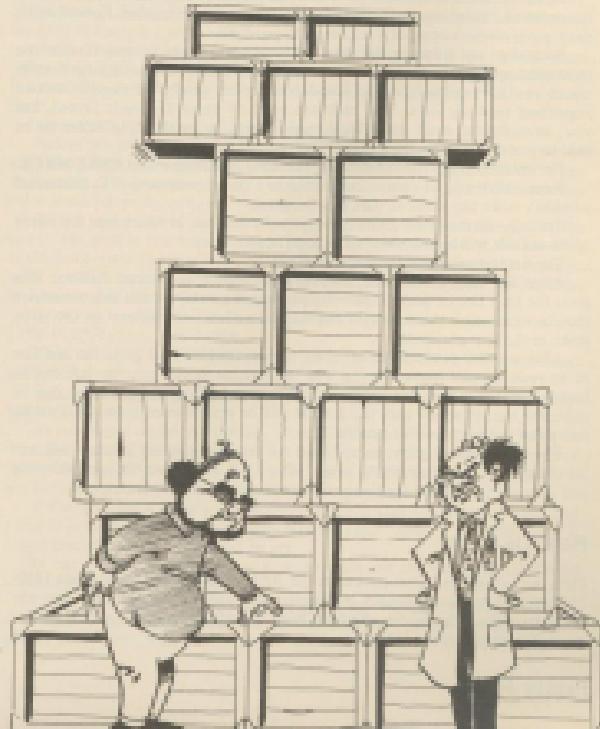
On selecting option 1 you will be told what the value of the PMPad item is, if the stack is empty you will be informed.

Selecting 2 mm will be equivalent to

enter a value, numeric or string, the value will then be added to the stack and you will be returned to the menu.  
End is self explanatory.

"Well I hope you can find some time

for stacks and, although, the program given is not really useful it should demonstrate how stacks operate, and the routines can be adapted for use in your own programs should you find the need.



When developing a large Basic program you'll find that sooner or later the line numbers become quite messy. In one part of your program you have codes of spaces between line numbers, while in other parts it's impossible to insert a single new line.

The only answer is to remember the textile.

This is what the tool kit routine does which we want to develop this month. Again, once you understand how Basic deals with lines and line numbers, this is quite straightforward to do. And here Commodore Basic makes, for once, life easier for us, by having structured a textile in quite a special way.

### The Linkpointer

Commodore starts each Basic line with a pointer to the next line. In this way a Basic textile is chained. To find a specific line you don't have to sift through the whole of the textile. Instead you just jump from line pointer to line pointer, each time looking at the actual line number which follows directly afterwards. The rest of the line you can ignore.

The linkpointer contains the address of the start of the next line, expressed in the usual low byte/high fashion.

The end of the textile has been reached when the two linkpointer locations contain zero.

Renumbering a textile involves simply jumping from linkpointer to linkpointer, each time changing the line number that follows in the next two locations.

### Renumbering Options

But in order to make our renumbering routine as useful as possible it is a good idea to include some options into the command.

First, we want to be able to determine in what step the textile will be renumbered. "Step" means the distance between each line number. For example, most programmers number a textile in steps of ten.

Secondly, we want to be able to determine where in the textile the renumbering starts and where it ends. This is useful if you have a large textile where you have inserted (or noted down) with which line number certain important routines start. You may not want to upset this basic layout, but you, nevertheless, need some local renumbering to be done, in order to be able to insert some new lines.

For renumbering I have chosen the extended Basic command **RENUMBER**.

Renumbering is, of course, only done as a direct command. The command wouldn't make any sense as part of a program.

You can use the command without any parameters, in which case the whole of the textile will be renumbered in steps of ten.

The first parameter is the step value.

After this comes a comma, and then the second parameter follows. This gives the start line of the renumbering process. You may omit this parameter too, in which case the whole of the textile will be renumbered in the steps given in the first parameter.

After another comma follows the final parameter which gives the last line to be renumbered. (Actually, the way the routine works out, the last line to be renumbered is one line before the line given.) This last parameter can be omitted too, in which case the textile will be renumbered from the starting line given to the end of the textile.

The line number given as the start of the renumbering process will not be changed. The renumbering starts after that line. Also, the renumbering will stop one line before the line given as the end, as already mentioned.

### How It Is Done

First, we gather the parameters after the **RENUMBER** command (lines 1860-2860). If there are no further parameters (or none at all), we will find the usual zero which terminates the line. **REQ**, therefore, tells us if no parameter or no further parameter is there.

# Extended Basic

**Renumbering your textile is easier than you may think**  
**By Burghard-Henry Lehmann**

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1000      1000 1000
1001      1000 1000
1002      1000 1000
1003      1000 1000
1004      1000 1000
1005      1000 1000
1006      1000 1000
1007      1000 1000
1008      1000 1000
1009      1000 1000
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1012      1000 1000
1013      1000 1000
1014      1000 1000
1015      1000 1000
1016      1000 1000
1017      1000 1000
1018      1000 1000
1019      1000 1000
1020      1000 1000
1021      1000 1000
1022      1000 1000
1023      1000 1000
1024      1000 1000
1025      1000 1000
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1107      1000 1000
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1109      1000 1000
1110      1000 1000
1111      1000 1000
1112      1000 1000
1113      1000 1000
1114      1000 1000
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1116      1000 1000
1117      1000 1000
1118      1000 1000
1119      1000 1000
1120      1000 1000
1121      1000 1000
1122      1000 1000
1123      1000 1000
1124      1000 1000
1125      1000 1000
1126      1000 1000
1127      1000 1000
1128      1000 1000
1129      1000 1000
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1665      1000 1000
1666      1000 1000
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1672      1000 1000
1673
```

# Handling Basic

If a parameter is given we gather it into the appropriate variable by calling an two ROM routines: `READA` gets the value itself and places it in the floating point accumulator 1. `SHFTF` gets the value from the floating point accumulator and puts it into zero page \$10/11, and also into the Y-register (low byte) and the accumulator (high byte).

After each parameter the next character is tested to see if it is a comma. If it isn't, the routine exits by giving a syntax error report. This syntax error report is forced simply by jumping to the normal routine (lines 1180-1190) instead of returning from the subroutine, since the whole of the remastering routine is a subroutine.

In the case of an step parameter, we enter 10 into the variable, called `STEP` (lines 2380-2389). This will result in the textfile being remastered in steps of ten.

In the case of no start parameter, we enter zero into the variable, called `START` (lines 2430-2440).

In the case of no end parameter, we enter the highest possible line number into the variable, called `END` (lines 2480-2489). This is, of course, 65536, or 1FF in the low byte and 5FF in the high byte.

## Renumbering a Textfile

First, we get the beginning of the textfile from the system variables `SRB/SC` and copy it into our variable, called `LINKPOINT` (lines 2680-2710). The beginning of the textfile means also the first linkpointer in the chain of all the linkpointers.

Now, we test if the start parameter had been given (lines 2750-2760). If it hadn't we jump straight to beginning of the remastering routine proper. Otherwise we have to find the line where remastering starts.

As I've said, with the help of the linkpointer, this is pretty easy.

We enter a loop which jumps from one linkpointer to the next (lines 2830-3030). That is, the address contained in the linkpointer is gathered and becomes the next linkpointer, and so on.

At the beginning of a test is made, if the end of the textfile has been reached (lines 2850-2960). If the end of the textfile has been reached, this means, that the start line given does not exist. In this case the routine exits with a syntax error.

Lines 2980-3030 perform the chaining action itself.

Before we enter the remastering loop itself, we gather the line number after the linkpointer where we start into a variable, called `CURRENT` (lines 3100-3160). This variable always contains the line number to which the step value is added, performing the remastering itself.

At the beginning of the remastering loop itself, we test first of all if the end of the textfile has been reached (lines 3250-3260). That is, if the low byte of the linkpointer contains not zero, the loop continues as normal. If it contains zero, the high byte of the linkpointer is tested for zero. If that too contains zero, the end of the textfile has been reached. The routine exits.

Next, the next linkpointer is put instead of the former one in the variable `LINKPOINT` (lines 3310-3320).

Then we test if the line given in the end parameter has been reached (lines 3400-3520).

For this I am using a special way of comparing two 16-bit values (lines 3460-3520).

As you know, on the 6510 dealing with 16-bit numbers can be quite involved. To compare two 16-bit numbers, we subtract the two numbers from each other and place the result in a variable, called `TESTPSTOWE`. This variable has no other purpose but to set the zero and carry flag.

If the first value equals the second, the zero flag will be set. If the first value is less than the second, carry will be clear. And if the first value is larger than the second, carry will be set.

In our routine, if carry is set, it means that the end parameter has been reached and the routine exits.

Finally, the remastering itself is done by adding the step value to `CURRENT` (lines 3580-3630) and then writing the new line number into its proper place (lines 3660-3700).

```

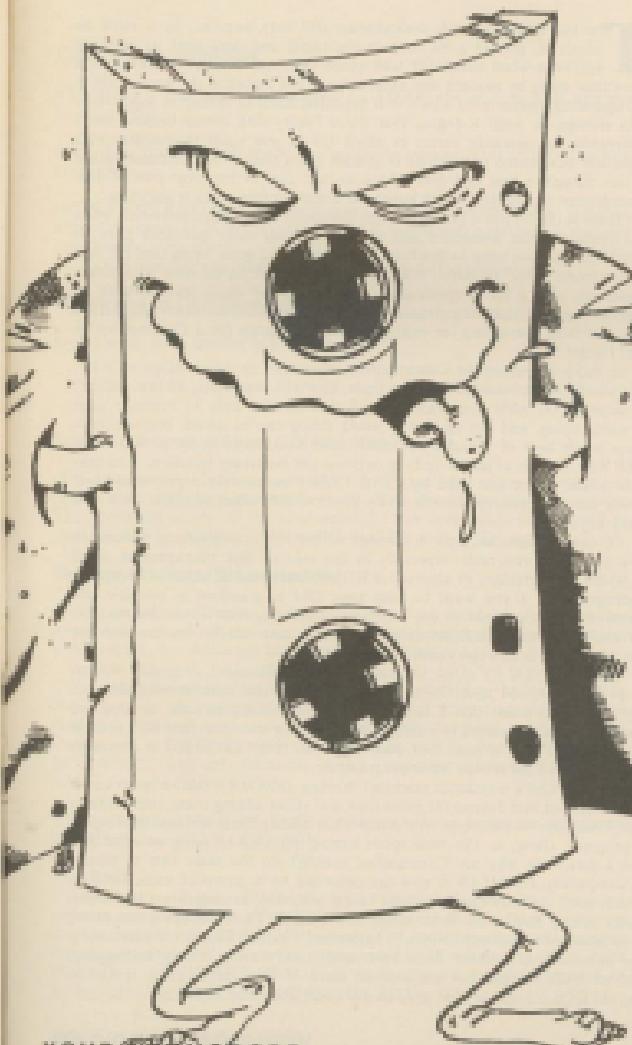
    2620      LDX #1
    2630      LDY #0
    2640      LDZ #0
    2650      LDW #0
    2660      LDW #0
    2670      LDW #0
    2680      LDW #0
    2690      LDW #0
    2700      LDW #0
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    2720      LDW #0
    2730      LDW #0
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    2750      LDW #0
    2760      LDW #0
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    2800      LDW #0
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    2990      LDW #0
    3000      LDW #0
    3010      LDW #0
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C64 PROGRAMMING

# Flash Load

*Create your own flashing bands whilst loading and saving your creations*

*By Clive Horner*



YOUR COMMODORE

**F**lash Load is a machine code program which creates the flashing bands while loading a normal program from cassette, just like commercial software.

To use the routine, type in the Basic loader and save it. Once you are happy with it you may run it. You should now see the message **FLASH ENABLED**.

There are a couple of ways to control the program. For example in `SYS(34000)` you can type:

**POKE165**      This will reset the computer back to normal.

**POKE165**      This enables FLASH LOAD. This is necessary after a reset or after resetting the computer.

Also when saving programs the flashing bands will also appear.

<b>Basic loader</b>
<b>10 POKE165</b>
<b>10 BASIC:LOAD "LOADNAME",PC,NEXT</b>
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# Get the most from your disk drive with this enhanced DOS utility

By M. Holmes

The old C64, although undoubtedly still very popular, is, it must be admitted, getting a bit long in the teeth and does tend to show its age even when compared with some other contemporary makes, and more than every by modern day expectations. For instance, the way in which the operating system with which it is provided leans in favour of tape based data storage, to such a degree that when floppy disk drives became more affordable, the amazingly natural in which the C64 was made to converse with them was guaranteed to frustrate in double quick time. The nice consequence of this though is that said drives have to take care of the large part of disk management themselves, which leaves the computer free of these activities.

There is the, to put it politely, crude simplicity of the Basic provided, when you consider what wonderful and useful keywords other machines have. It didn't take me too long to discover that really it's a good thing that the C64 Basic should be so, er, basic. Whilst it is still possible to do what most other Basics do, with a bit of application, any listings are easily translatable to another machine, since big standard Microsoft based keywords are used. Have you ever tried converting for example a BBC program for a Commodore to use it? Forget it.

In order to extend the Commodore's repertoire, or speed things up a bit, one usually has to resort to machine code. This isn't necessarily all that difficult (it depends on what you want; not all that can be done in machine code is worth doing, and not all that is worth doing can be done), because there are a whole host of valuable and easily used routines in both the BASIC and KERNAL ROMs available to help perform the necessary function. You may have already seen and used by *LIVE INPUT* routine (in a previous issue) which uses this concept to effectively give the C64 what amounts to a new Basic keyword.

Of course there are now a number of after-market products which can give you what you need, especially in the area of disk management, some of which are cartridges or alternative ROMs, and some of which are software packages. But, if you want to keep your C64 as standard as possible, for whatever it is you want to do, you need something that leaves the memory virtually untouched, is there when you need it, and remains unobtrusive and out of the way at all other times.

This is DOSMAN (Disk Operating System Manager), originally written to provide the C64 with the ability to recognise that disk drives exist, but not after it so much that I cannot use my little machine code or modified Basic routines. In essence it is similar to something once provided on a utilities disk supplied with a new 1541 disk drive (see they still?), and is primarily meant to be an aid for the Basic programmer.

Isn't the C64 a wonderful machine? Writing DOSMAN was so much easier than expected that I spent the extra time and effort adding some extra utilities that I was sure would prove very useful while editing Basic text and developing a program. Okay, so I've been spoilt having got used to using an IBM PC, but I didn't see why my Commodore couldn't do the same sort of things. Consequently DOSMAN is now accompanied by a group of useful utilities which don't actually have anything to do with disk management, but which make editing Basic a whole lot easier and quicker. These include a customised Non-Maskable Interrupt (NMI), programmed function keys for implementing the most of ten repeated Basic commands used during editing/debugging, and an QBDI routine. For convenience many of these have similar syntax to the old DOS 2.1 on the 1541 utilities disk, and *The Final Cartridge*.

## Installing Dozman

Type in and save the program **DOSLOAD.COM**. Once run, this will create the BASIC program - **DOZMAN**. To activate **DOZMAN**, type **SYS53234** after loading.

The program and its satellites sit at 20781 (SCA40) onwards, leaving the lower 16K RAM area free for you or your programs to use.

## Commands Available

**SYS 53234** - This enables/re-enables **DOZMAN**, the custom NMI and the function keys.

**@ V** - This disables **DOZMAN**, but leaves the custom NMI and the function keys intact.

**[RUN|STOP|RESTORE]** - This disables the custom NMI and the function keys, but leaves **DOZMAN** intact. A **BREAK** instruction executed in machine code has the same effect.

Having got it in and enabled, you have access to the following:

The six primary DOS commands

Direct mode only, ignored in program mode:

(on its own) - get and print disk drive error message.

**@ < command>** - Send **< command>** to current disk drive if it isn't one of the three secondary commands below. You do not enclose it in quotes. The **command** is any of the conventional DOS commands such as **@L** to initialize; **@V** to validate; **CNAME2-NAME1** to copy file, etc.

The three secondary DOS commands

**@ < number>** - Change the current device to **< number>** for all further operations. e.g., **@ 9** results in all further DOS activities to be carried out with device 9. **@ 8** changes the current device back to 8.

**@ S < optional mask>** - Get and display disk directory from the current device. Basic memory remains untouched. Wildcards and filetype identifiers can be used in < optional mask> to select files to view lexically or according to filetype, e.g. **@ SID0\$\*** lists only files beginning with the first three characters **SID**; **@ ?HTT?** lists only filenames of five characters in length; **@ S\*P** only lists files of type **PRG**.

**@A** - Disables **DOZMAN**. DOS commands will no longer be recognised, but will produce **SYNTAX ERROR**.

**(- LOAD**

**/< filename>** - Load **<filename>** from current device into Basic memory, replaces program already existing if any. If there was a problem during the load there will be **LOAD ERROR** displayed. You must then use **@ 8** to interrogate the drive to find out what went wrong, which will return e.g. **FILE NOT FOUND** or **DRIVE NOT READY**. If the load was successful there will be no message after **LOADING** and before **READY**.

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#### - LOAD & RUN

<filename> - Load filename from current device into Basic memory and RUN it immediately afterward. If a LOAD/LOAD ERROR occurs it will not be RUN. See above if in error.

中·TELE

**9) < F10KEY > = Verify that program currently in Basic memory is the same as < filename > on disk in current drive. If the verify is successful (they are the same), no message appears between PUBLISHING and READ!. If they are not the same, scroll over VERIFYING TO READ.**

1 - 10000

! <filename> - Since the KERNAL load routine is capable of LOADING to anywhere in memory, there's no reason why we can't include this very powerful utility. Armed with the I command it is now easier to create a library of Basic program modules, or to write a program in pieces, each tested and debugged individually, as this saves time and is more convenient, and is less confusing. It also encourages structured programming, writing each piece of a program as a subroutine. The important thing to remember about APPENDing though is that you must ensure that the next block of Basic text appended has higher line numbers than that already in memory. It won't prevent it being loaded but the interpreter can't access the lines above the point where lower numbers are found. If a LOAD ERROR occurs, then you've got a slight problem - the append process starts by decrementing the Basic variables pointer **VARADR** by two, to bring it in line with the free end of the program in memory and to use it as a starting address. If the load fails and APPEND is re-attempted, **VARADR** is further decremented by two. If at the second attempt the load was successful, the the new code will crash over the end of the already existing program. To prevent this redefine **VARADR** with the QWORD routine before re-attempting APPEND.

- 24 -

< filename > - Save program in memory as **filename** to current drive. The DOS error message follows automatically. If the save failed it could well be **FILE EXISTS** for example. Note **MARTIAL** is used to indicate where the file is. If its value has altered for any reason (naturally a surprisingly common occurrence), and not just through using non-standard methods like programmed APPENDS then either not all of the programs will be saved (if **PAF&F&A** fails short) or some of the variable storage area will be saved with it. Once loaded a program, RUN it and have it crash! On LISTing it's found to have turned into gibberish! This is the kiddie at fault. The OLD routine will make it for the live through.

Timeline

All of the LOAD, LOAD & RUN, VERIFY and APPEND functions have the effect of refreshing **PARTIAL**. This is done correctly unless an error occurs. If for example a verify fails, **PARTIAL** will end up reflecting the point where the end of the program verified on disk would have been if it had been loaded, and not where the program in memory is now. If a LOAD failed then it will have a stupid value, like an address in zero page memory (ask!). But good old QLOAD will come to the rescue. Also all LOAD, VERIFY and APPEND processes recheck BASIC lines and perform an automatic CUE on completion.

### The Function Keys

ignored in program mode after RUN (normal ASCII value intact for program), but not after [STOP] and CONT have been used, nor if GOTO used instead of RUN.

#### F1 prints LIST[RETURN]

LIST all of program in memory from start.

#### F2 prints LIST[SPC]

Prints LIST and waits for line number(s) to be added.

#### F3 prints RUN[RETURN]

RUN program in memory from start.

#### F4 prints GOTO[SPC]

Prints GOTO and waits for line number to be added.

#### F5 prints CONT[RETURN]

Since a single press of the [STOP] key causes the interpreter to break out of the program to direct mode while running, why not also have a single key press to make it CONTinue where it left off?

#### F Prints SYS2219[RETURN]

Runs the OLD routine.

#### F7 Prints SYSS194[RETURN]

Switch TRACE ON. This powerful debugging aid has the effect that whenever the interpreter comes upon the beginning of a fresh Basic line to be processed (not one it's doing already) the Basic line number will be printed on the screen and enclosed in square brackets. While running the program the screen will pretty soon fill up with numbers, displayed across the screen continuously (not on separate lines). The process can be slowed using [CTRL] or stopped with the [STOP] key, such that the line numbers can be examined to see which bits of the program are being executed, including those which are but shouldn't be, and those which should be but aren't will be conspicuous by their absence. It will show you where the program is getting stuck in an endless loop, for example.

TRACE ON is also active in direct mode, and any Basic commands used in direct mode will be preceded by a rubbish number, but this doesn't matter; it doesn't prevent normal use.

#### F8 Prints SYSS195[RETURN]

The line TRACE utility is switched off.

### The Custom HIM

You may know that the [RUN/STOP/RESTORE] key causes a Non-Maskable Interrupt and generates a warm start to Basic. They usually have to be used when [STOP] alone won't work, like where the MPU has got lost in a machine code routine, or if a peripheral has hung up (thus also hanging up the C64), and even for getting out of a Basic INPUT loop to clear a crash. The 'warm start' includes erasing certain vectors and resetting the memory map to ensure both ROMs are accessible, which is fair enough, but it also clears the screen and resets it to its default blue colour, which is a nuisance if you still want to see the text that was on it and if the colours have been re-defined by your

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F9 1000 000000,13,0,00,00,78,13,0,7
L,78,00,78,13,0,07,78,00,00
F0 1000 000000,13,0,00,00,78,13,0,7
L,78,00,78,13,0,07,78,00,00
F1 1000 000000,13,0,00,00,78,13,0,7
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program. It would be nice if it were possible to simply force the machine to direct mode Basic and leave the screen alone, so that we can still read our printed variables, etc.

Did you know that the [RESTORE] key above is the thing that generates the NMI? Normally nothing apparently happens, because the KERNAL routine handling the NMI first examines the keyboard to see if the [STOP] key is down. If it is, then the warm start is performed. If it's not, then no changes are made and the C64 carries on as though nothing had happened.

The first part of the custom NMI routine is a duplicate of that of the KERNAL NMI Handler, with the difference that if the [STOP] key check is false then our custom interrupt is performed. If the [STOP] key is down then the tests are carried out by the KERNAL exactly as standard.

If the [STOP] key is not down then we get instead:

#### INTERRUPTED

#### READY.

*INTERRUPTED* is printed in yellow, *READY.*, and all further text typed, in white. The screen remains intact and no drastic memory changes are made, other than the the custom NMI vector is refreshed (this isn't actually necessary, but the routine is also used to initial itself).

Try this,

POKE 49488,16 POKE 49169,16 POKE 49170,16.

Now SYS 49168.

What's happening now is that the C64 is trapped in an endless machine code loop. Try [RESTORE] to bring it back. Note your POKEs are still on screen.

#### The OLD Routine

Of all the keywords the C64 hasn't got, the one it could really do with is **OLD**. **OLD** is the opposite of **NEW**, but as hinted beforehand, it's not just a means of recovering a listing that has been **NEWed** by mistake. Whether **NEWed** or not, it effectively cleans up a Basic program in memory by re-chaining it and re-filling its pointers. It doesn't seem likely that there should be corrupted but it can happen in the process of constant test running and re-editing, and particularly where lines are added or deleted without typing CLR first. In these circumstances it is possible for poor old KERNAL to get a bit confused, resulting in the interpreter trying to make some use of something which is actually a variable, or a large chunk of rubbish appearing between the end of the program (usually terminated properly so it RUNs OK) and the variables, and which is **SAVED** with the program! It's happened to me several times.

If **NEWed**, the listing hasn't actually disappeared. All that's happened is the first two bytes of its storage have been crossed, and two zero bytes in a position where a pointer to next BASIC line should be meant end of program. The "**OLD**" routine inserts a dummy value in these, which doesn't matter as the BASIC re-chain routine is then called to sort it out.

It gets better. Try this - load a program with **LOAD**... and press the reset button (if you have one, or else type SYS 64738 (ensuring that the machine will reset in standard form). Either of these actions simulate a 'cold start', what you get when you switch on the C64. I bet you think everything has been wiped out, didn't you? Not so. It's true that one of the functions of the 'cold start' is to perform a memory test, but this is a non-destructive test and in my case it only need to find out where the Basic ROM is so that the top of Basic memory can be defined. In actual fact the only way to erase the memory completely is to switch the machine off.

Now type SYS 2397.

Look, you didn't get a 'warm start' (like [RUN/STOP/RESTORE]) so the **OLD** routine is still there. Now LIST. Hey presto, the Basic program is still there too! Now you can get out of major problems with the reset button and not lose everything.

So that's DOSMAN et al. It's highly probable that you may quickly feel helpless without it. I know I am.

#### DOSMAN Memory Map

SCA05	S1781	DOFUNC
SCA04	S1408	PUTKEY
SCADA	S1530	PLIST2
SCAEP	S1991	TRACON
SCAF2	S1994	TRACOF
SCB01	S1999	ONMSG
SCB0C	S1980	OFFMSG
SCB48	S2040	OUTMSG
SCB5A	S2058	TENTRY
SCB70	S2080	NNICUS
SCB93	S2197	OLD
SCC08	S2234	DOSMAN
SCC09	S2220	VECTAB
SCC13	S2244	COMTAB

Entry for custom IRQ. Test if function key down, and process as necessary. If not service IRQ as normal.

Copy string pointed to by x, y into keyboard buffer and closing V.

"SYS\$15\$[RETURN]";

"SYS\$16\$[RETURN]";

SYS here for [TRACE ON].

SYS here for [TRACE OFF].

"[TRACE ON]";

"[TRACE OFF]";

Print string pointed to by x, y till closing V.

Display BASIC line No. while "[TRACE ON]".

Initial refresh/perform custom NMI.

SCB03 \$2163 IRQ0CUS  
Initial/refresh custom IRQ for function keys.

SYS here for "OLD" routine.

SYS here for install DOSMAN, custom NMI and function keys.

Primary DOS command jump table.

List of primary DOS commands.

SC010	\$1291	BUFFER	DOSMAN input buffer.
SC011	\$1299	FLAG	Mode flag for LOAD/LOAD A & RUN/VERIFY APPEND.
SC017	\$1343	DEVICE	Copy of current device number.
SC019	\$1349		Temporary storage of disk directory sector counts.
SC01B	\$1347	BASTAB	"LIST\$[RETURN]"; "LIST" \$0; "RUN\$[RETURN]"; "GOTO" \$0; "CONT\$[RETURN]"; "SYS\$21\$[RETURN]";
SC0A8	\$1392	GETVAL	Get numeric value from BASIC line into \$14 - \$15 hex.
SC0B0	\$1400	FLINT	Table of BASTAB address pointers.
SC0C9	\$1427	NWTWBD	"INTERRUPTED".
SC0D6	\$1446	CODE	Storage of code to wedge CHRGIT.
SC0E1	\$1449	INSTAL	Wedge CHRGIT and install DOSMAN.
SC0F3	\$1467	ENTRY	CHRGIT jumps here to run for DOS commands.
SCD05	\$1539	COMM	Process recognised primary DOS command.
SCD1D	\$1541	GETERR	Get and display current device error message.
SCD68	\$1584	SENDCM	Send command string in buffer to current device.
SCD8E	\$1598	READ	Input BASIC line into buffer.
SCD93	\$1643	GETCHR	Just like CHRGIT, but doesn't ignore colors.
SCD9A	\$1664	CHASEU	Change current device number in memory.
SCDCA	\$1682	RESTOR	Restore CHRGIT to normal, deinstall DOSMAN.
SCDDC	\$1708	GETDIR	Get and display disk directory from current device.
SCDE1	\$1813	LOADL	Load BASIC prog.
SCDE9	\$1841	LOADR	Load and run BASIC prog.
SCET1	\$1849	LOADU	Verify BASIC prog.
SCED9	\$1896	LOAD/	
		RUN/	
		VERIFY/	
		APPEND	
		error	
		handling.	
SCFCA	\$2818	APPEND	Append BASIC prog. to memory.
SCFCF		SAVE	Save BASIC prog. in memory to current device.

# RESET CIRCUIT

Make your own reset  
circuit easily and  
cheaply

By B. Leerkotte

**O**ne of the most infuriating design faults of the C64 is that Commodore omitted a reset button. If you do not own a suitable cartridge, you are constantly at the mercy of power surges and power losses. How many times have you "lost" that all important program (the one that you have not bothered saving yet)? If you are one of those unfortunate, then this article is for you. I will show you how, with a little effort, you can build your own.

The reset is achieved by pressing the restore key for approximately 5 seconds.

The circuit must be installed in the RF-output which normally triggers the reset-timer U20. The circuit replaces the resistor R30 (1kohm).

## The theory

The moment that the Restore key is pressed, capacitor CR1 is charged by way of resistor RR3. The voltage on the trigger-input 8 of U20 will fall. When that voltage reaches the trigger voltage of 1.2V, the timer U20 gives a reset pulse.

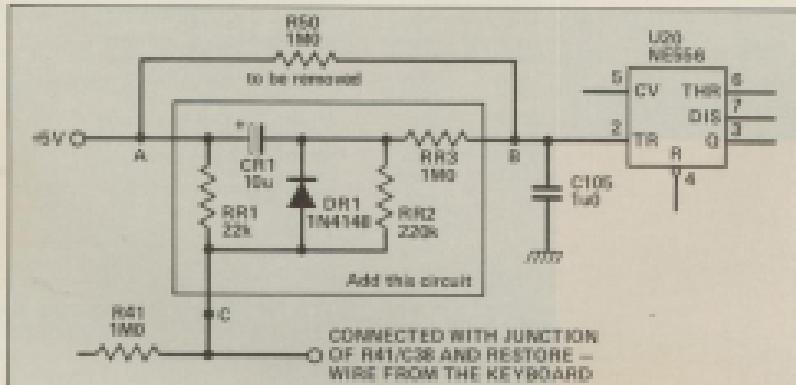
If the Restore key is released before U20 triggers, capacitor CR1 will be discharged rapidly in approximately 0.5 seconds. Therefore, it is impossible to reset the C64 by repeatedly pressing the Restore key; the Run/Stop-Restore Non Maskable Interrupt will function as before.

## Installation

The circuit is reliable and is easy to build on a square-pad board. It is also easy to install into the C64.

Remove resistor R30 (1Mohm) and connect wire A to the left solderpoint which came free. Wire B is connected with the right solderpoint (see diagram). Point C must be connected with the right side of resistor R41. Now point C is connected the Restore key.

You should now have a functional and reliable reset source.



# WHIPCRACKAWAY

**Commodore Crusader**  
**Kevin Crosby dons his**  
**hat and bullwhip to**  
**report on the latest**  
**installment in the**  
**Indiana Jones saga**

Left: Indy (Harrison Ford) prepares himself for action. Like an archaeologist he must all diggity.



Above: Things heat up for messers Jones and Connery.

**"Somehow the audience always seem to be able to go 'ugghh yukky-poo' whilst still keeping a smile on their faces."**



Above: "Last one to the pub is a rotten scamp!"

Well I've just come back from my local cinema, not pub - this time! - and what a film!

I am, of course, referring to the third and apparently the final film in the Raiders series - Indiana Jones and the Last Crusade.

Once again Harrison Ford plays the slightly unorthodox Archaeologist cum Grave Robber who stops at nothing to claim the ancient treasures he seeks. This time though we have a second Dr Jones to deal with in the form of Sean Connery, who plays Indy's Father Henry.

"Crusade" fits in around the previous two films Raiders of the Lost Ark and Indiana Jones and the Temple of Doom. The first part is set in 1912 where a Boy Scout stand Indy (played by River Phoenix) has one of the first adventures in his career. These come in as excellent job in tying together some of the mysteries in Jones' past like his choice of bullwhip as his main weapon, his fear of snakes and the curious scar on his chin, etc. Nice touch that I thought.

The action soon works its way up to 1938 where the Harrison Ford-aged Indy replaces the crucifix which was stolen him 26 years previously, not for personal gain but for the good of the Institute that he teaches (how noble). However events take a turn for the worse when Indy recovers his Father's notebook on the whereabouts of the Holy Grail - the famed chalice that gives the holder a prize even better than a year's subscription to *Your Commodore* - the gift of eternal life.

As this quest was his life's obsession, Indy is understandably puzzled as to why his Father has sent it to him. Things soon fall into place when an American Art Collector by the name of Walter Donovan (played by English actor Julian Glover) informs Indy of his Father's disappearance and asks for his help in finding him by tracing the route mapped out in the notebook. There are, of course, some vital pieces of information missing which Indy must find out before he has a chance of finding his Father.

This initially takes Indy and his Curator Marcus Brody (played once again by Denholm Elliott) to the town of Venice where they meet up with Elsa, the token female in the film (played by the stunningly attractive Alison Doody) who once helped Jones the Elder on the same journey before his kidnapping. And, as is customary in an Indy film, gregario scenes involving creatures which many would not exactly trade their Care Bears for (in this case Rats) are used, but somehow the audience always seem to be able to go "Uggh Yukky-Poo" whilst still keeping a smile on their faces. A quality present in little other than Spielberg films.

Anyway, one thing leads swiftly to another and Jones the Younger is off to the mountains of Austria to rescue dear old Dad and to help him fulfil his life long ambition - To find the Holy Grail.

Once father and Son are reunited they very quickly become one of the silver screen's most endearing family teams. You could certainly tell that both Sean Connery and Harrison Ford were really enjoying themselves while making this film. I expect to see more films, not necessarily in this series, with Ford and Connery teamed up as they certain work well together on screen.

Excellent performances too from Denholm Elliott and John Rhys Davies who both reprise their characters from the first film. Nice to see them back.

No prizes for working out that good triumphs over evil but in this sort of film you don't sit there wondering who will win just how they win.

As is to be expected the stunts work and set pieces are just as good, if not better, than their predecessor's although I have to admit that the special effects were more noticeable in this particular installment especially during the scenes involving the Zeppelin and the aerial dogfights.

However, that grip aside, a positive thumbs up for Indiana Jones and the Last Crusade. It has succeeded to capture much of the atmosphere of the first film whilst not forgetting the humour that was much more prevalent in the second.

Messrs. Spielberg and Lucas deserve several dozen Brownie points plus a free subscription to *Your Commodore* (what's that? - Ed) for their stirring efforts.



# AMERICAN INDOOR SOCCER

Soccer in the states is mostly played indoors by six-a-side teams. Here's your chance to play, manage and coach in the American Indoor League.

**T**HIS American Indoor Soccer is the only way to play soccer in the US, but that doesn't mean that it lacks any of the skill or excitement of the full-size game. In fact, indoor and micro-games are played by professionals, and you can tell how well you can substitute at will to keep the action fast and furious. However, selecting subs is the only job you've got in this game. You can also act as centre forward, goalkeeper, centre midfield and general manager.

At the start of your campaign the role of general manager will be given to you, and your squad is led by the regulars in your six-team group and the twelve new imports. If you're going to have any chance of reaching

the end of season playoffs you must think for your players. As you begin the game you have two trading points to either trade your team or trade for a better player with a skill level between 100 and 1000 which would bring him better than your present average of 15 to 20.

On the field you will drift, tackle and shoot as you would in any other football game, except that your forwards can head the ball and show off with overhead kicks although the play can be broken up by exactly random penalties. Seeing even the best laid match plans...

Whenever there is a free kick or when the keeper gathers the ball, the coaches'

Mindscape - £14.99 Disk

appear which allows you to make substitutions and decide attack and defensive tactics, ranging from pass to go, change for the best reply and all other choices in preparing the attacker for the attack.

The game shows a lot of promise but it may appeal more to Americans. If you've played Broadbent's Gary Lineker's Superstar Soccer you'll see exactly the same graphics and music. The only difference is that using the number placards on the pitch. This is because the game designer, Steve Lee, produced both games like a shareware they are sold with two different games.

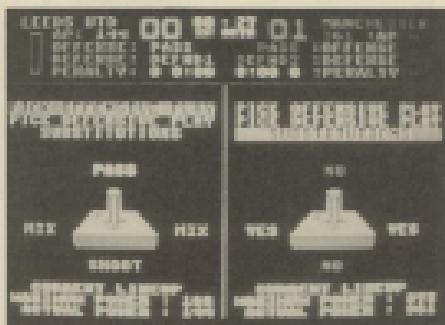
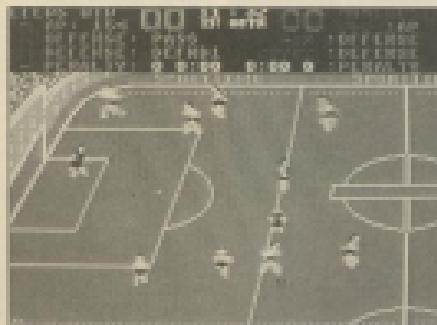
Tony Hetherington

Newline, the game developer, also wrote *Indoor Sports* and *Clubhouse Sports*.

## INFO

Gameplay: 50%  
Graphics: 46%  
Sound: 35%  
Lastability: 40%  
Overall:

43%



# INDIANA JONES THE LAST

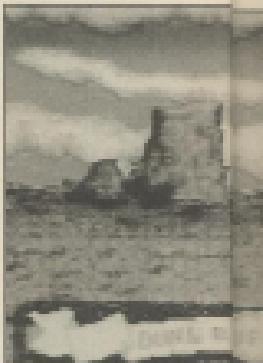
The man in the hat is back again and this time he's brought his dad! That's how they trailed the latest adventure of Indiana Jones. Now it's a computer game.

**Lucasfilm (US Gold) - £24.99**

Below: The cross of Coronado? Is that the name of the Maltese Cross?

## INFO

Gameplay: 65%  
 Graphics: 60%  
 Sonics: 45%  
 Lastability: 55%  
 Overall:  
**56%**



**Y**OU'VE seen the film, now play the game, that's the message from Lucasfilm as it launches a platform-style arcade game for the Amiga, with other versions to follow.

shortly. This is, in fact, just one of two games that will be based on the film, the other being an arcade adventure produced by Lucasfilm.

The arcade game is based on five sequences from the

film and plots Indy's progress from a novice through to his final crusade for the Holy Grail. As the game opens he has just entered the mine complex in which they're are stealing the silver

cross of Coronado. While their backs are turned Indy grabs the cross and runs. On screen the caves are full of platforms, ropes to climb and bad guys armed with guns. If you're going to survive you'll need torches so you can see where you're going and whips to beat your way through to the exit. Then the chase continues on top of a circus train packed with really wild animals. This is where Indy learns to use a whip for the first time.

It is now 1898 and Indiana Jones is racing the Nazis to find the Holy Grail. His only clue is his father's Grail diary that leads them both underground into the rat infested crypt of a Franciscan church where they hope to find the grave of a Grail knight. After storming a castle to rescue his dad, and escaping in a Zeppelin, Indy arrives at the final and best part of the game as he comes

# ONES AND CRUSADE



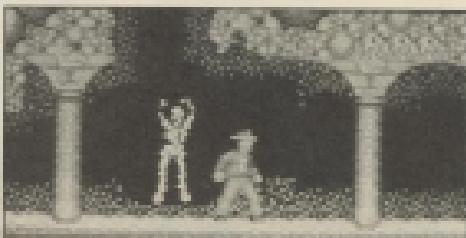
Above: Indy in his final hours.

the Grail Temple. Here he must pass three challenges called the Breath of God, the Word of God and finally the Path of God. These challenges become puzzles that must be solved with your joystick if you are to reach the Grail.

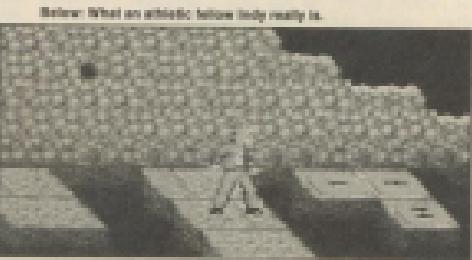
Luxemedia hasn't taken any chances by using the tried and tested platform style of game but with the whip cracking action it seems to suit the style of the film. Add a reasonable rendition of the Indiana Jones theme and you've got a game that's a lot of fun to play.

**Tony Hetherington**

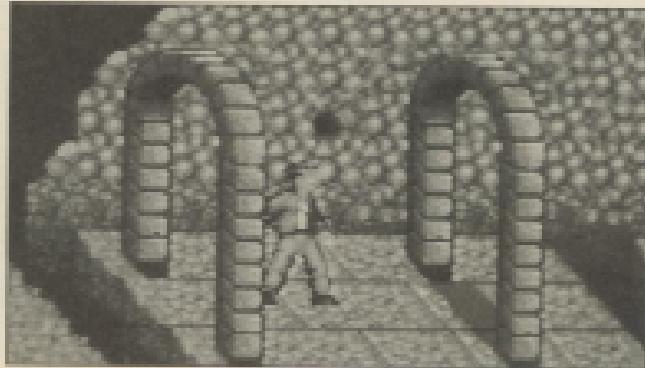
*Luxemedia is the software production part of the company owned by George Lucas, who is one of the movie moguls behind the film.*



Above: Everybody's got skeletons in the closet.



Below: Underneath the arches!



## Cartoon Capers and animation antics abound with this latest release from Magic Bytes



**A**NYONE who has read more than a few of my reviews will know that I have little time for licensed games. All too often, money that could usefully have been used in developing the product is spent on acquiring the rights to a film, television series or whatever. And the amounts that we are talking about are not peanuts.

The latest licensed title to come my way is Tom and Jerry from the German Company Magic Bytes and I am afraid that it does little to improve my above mentioned view. Just the opposite in fact.

The idea behind the game follows that of the cartoons reasonably well. Mouse goes looking for food. Cat sees mouse. Cat chases mouse. Cat catches mouse. Mouse escapes. Cat gets his consequences.

Here, Jerry is not looking for lumps of his favorite cheese, scattered around five different rooms. He has to collect as much as possible in the allotted time, bypassing all types of furniture in the manner of the platform days of old. The rooms are connected via a series of

mazes where you can gain or lose extra time by picking up either cheese or explosives.

Tom on the other hand is doing his best to stop Jerry by grabbing him whenever he can causing Jerry to lose 30 seconds of his time allowance. Jerry can drop things on Tom's head to keep him quiet for a while or run straight on by, for example, running on the shelves.

Jerry's delicious cheese is full of holes. Unfortunately, the gameplay suffers from a similar problem. To start with, there is no scoring system in the game. Apart from there being no incentive to play, you have no idea

as to how well or badly you are doing. This in turn affects other elements of the gameplay. For example, it now becomes pointless trying to stop Tom. The time spent in setting up an 'accident' could better be spent trying to pick up more cheese.

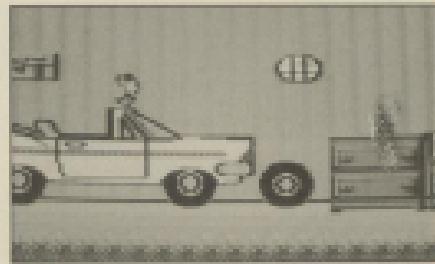
The tunnel sequence does not work at well at all. The dynamic explodes as soon as you look at it, let alone touch it. Trying to jump past the furniture is a lottery. Identical pieces may make you climb over them or allow you to walk underneath them. When Tom catches you, you get suspended randomly on the screen that you are on. It is

quite possible that you will be put in a dead end and have to wait for Tom to come and kill you again - a wonderful bit of game design I don't think.

The manual has been translated from the German by someone who can't speak English. It is littered with spelling mistakes (see is the game) and two of the pages are printed out of order.

I can't write any more mainly because I don't know that many bad words. All I can say is don't waste your money.

**Magic Bytes -**  
**£9.99 Tape,**  
**£14.99 Disk**



Above: But Jerry you can't drive, you're only a mouse

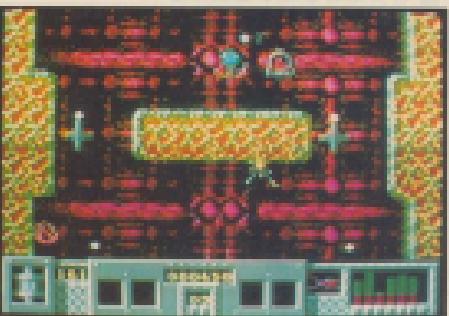
### INFO

Gameplay: 15%  
Graphics: 55%  
Sound: 40%  
Lastability: 20%  
Overall:

33%



Above: You shall have a baby...



Above: No, it's not Kabuki-kozo simulator!

**T**HIS summer season had come to Anity Island and thousands flocked to its beaches unaware of the terror that swam just below the calm waves. A great white shark was now feeding in these waters and it was feeding on people.

At first they thought the victim's wounds were caused by boating accidents but now you, Brady - Chief of Police, the job of ridding the island of this menace. Together with Quint, a shark fisherman, Hooper, a shark expert, and three experts down you set off to kill Jaws. Unfortunately, the special gun and its bullets that will kill the monster shark were on a boat that struck the reef and sank, so your first task is to dive down into the dangerous waters and find them. To add to your troubles Mayor Vaughn has refused to close the beaches and hopes to cover it up until you kill the shark, but you

must hurry, if seven swimmers are stamped you'll be sacked and the game will be lost.

One by one, your six divers climb into the diving bell and dive down into the depths of the reef to search for the four parts of the gun and the four vapor bullets that will kill Jaws. This isn't easy as the waters are teeming with hostile plants and fish out to eat you, if you think they're invisible just wait until you see Jaws. Luckily you'll also find useful objects to help you, such as extra air to top up your dwindling supplies, mines and bombs to clear caverns, bullets for your gun and treasure to add to your score and collection.

Eventually you'll gather all the gun bits and arms you need but your challenge is far from over as you have score three hits on the great white shark or start all over again.

The game is quite fun to play but there's one thing I can't understand: why has Sierra 7 gone to trouble of getting the rights to a film and then produce a game that has little to do with it? Tony Herbigington

#### INFO

Gameplay: 65%

Graphics: 43%

Sonics: 38%

Luxibility: 44%

Overall:

53%

**At last, the cult film of the seventies that terrorised countless cinema audiences has now appeared on the computer screen.**

**Screen 7 - £9.99**

Jaws is the debut game from new software house Screen 7.



# LIFE AND DE

Has the NHS fallen so low that they'd let a complete lunatic like Duncan Evans into the wards? Oh no, they have.

**T**here's no need to be afraid dear, this won't hurt at all... Aaaaaargh!!Oops, did I forget to turn the gas on. My mistake, still, she was getting up, and we did need the book.

Every fr you ever had about going into hospital is going to be realised when you play Life and Death by Software Toolworks. Thankfully in this game you are that mad eyed surgeon, and it's the other patients who are there to suffer. And suffer they do, as you wander through medical training, leaving the wards empty and the morgue packed.

Life and Death is all about surgery, progressing from being a naive scalped apprentice, to mastering the appendectomy before assaulting that greatest of organs, the heart. Still, it'll take you some time, and loads of patients, before you get that far.

It all starts with you signing in at reception, under the watchful eye of Monica, before heading to the staff room to pick up your accupuncture for the

room of doom, aka the operating theatre. There are six persons on hand in total, each represented by a file and digitised pic, of which you must pick two.

Then you're off to the classroom for an introductory speech, and a few hints and tips on general surgical practice.

After answering a phone

call, which doubles as the copy protection scheme, you get your first patient. Time to don the rubber gloves and face mask that come with the game! First examine the patient by probing them in every station of their midriff and abdomen - if there's any pain there's a simple analgesic to it.

Have a look at their

record chart and look up the symptoms, and decide whether to operate, administer antibiotics, refer them



# DEATH

to another doctor, go to X-ray, observe or use the ultrasound. For the first half of a dozen patients you'll probably make the wrong choice and end up back in the classroom being told so. At

least you'll know better next time, also your victims never get a second opportunity.

Eventually you'll get a case where you have to operate, and this is where the real fun starts, as it involves injecting drugs to counter blood pressure loss and heart problems, setting up gloves and blood drips, and

using all manner of fiendish implements to peel back layers of flesh as you head for the appendix.

The trouble is in finding the damn thing, and avoiding cutting into the Colon, which is messy. If you have a mouse connected to your PC it makes for easier surgery, as you often have to react very quickly.

There is a kind of perverse fascination in this game, the silly and diabolical,

where the depths of a patient is simply irritating, and the pleasure comes from seeing how far in you can get before cocking it all up.

The CGA colour graphics are excellent, and are wonderfully complemented by the sampled screens, and the best news is that the Amiga version should be ready about now.

## INFO

**Gameplay:** 87%  
**Graphics:** 85%  
**Sound:** 78%  
**Difficulty:** 80%  
**Overall:**

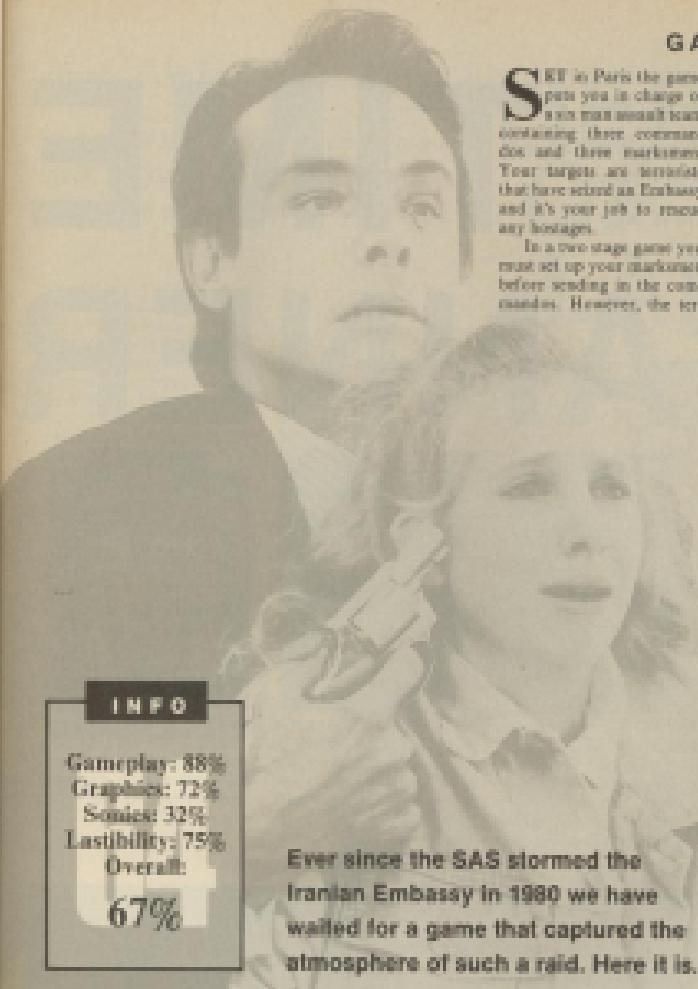
**86%**

*Surgery Toolkit* is best known for its *Circusman 2000* and *2000* programs, and is producing a brain surgery sequel to *Life at Death*.

Dr. Shepherd  
Title: Cardiologist  
Specialty: Cardiology

Left: Ellis, main and chop. All is the name of medicine, of course. Now, where did I place that kidney?





## INFO

Gameplay: 88%

Graphics: 72%

Sonics: 32%

Lastibility: 75%

Overall:

67%

**Ever since the SAS stormed the Iranian Embassy in 1980 we have waited for a game that captured the atmosphere of such a raid. Here it is.**

**S**EVEN in Paris is the game puts you in charge of a six man assault team containing three commandos and three marksmen. Your targets are terrorists that have seized an Embassy and it's your job to rescue any hostages.

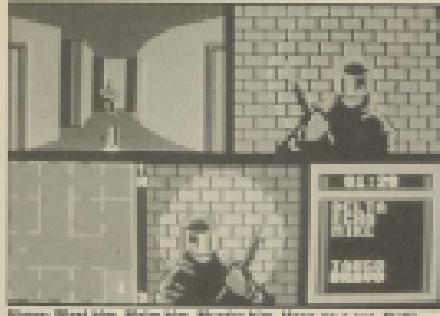
In a two stage game you must set up your marksmen before sending in the commandos. However, the ter-

rorists have the surrounding streets covered with searchlights so your marksmen must run, crawl and dive in and out of any cover that come to the windows. However, you must be sure that they're terrorists and not hostages before you open fire. Once the immediate area is cleared you can send in the heavy tools.

The commandos enter the building by abseiling from the roof and rappelling through the windows. They must then clear the floors of terrorists. Inside, the screen changes to show a 3D view of the room or corridor you're currently in and a map that plots the terrorist's movement. Now you have to think quickly to gun down terrorists while avoiding any injury to the hostages. When you find a hostage you must escort him to a safe room on the third floor and protect them from terrorist attack by moving instead of your team. As in a real assault good tactics and the speed and skill of your team will decide the outcome. Perhaps the toughest challenge is when a terrorist is holding behind his hostages. Then you have to make your reck count and that will take some practice.

Several levels of difficulty and the ability to play either half of the game separately will ensure you'll keep coming back for more.

Tony Hetherington



*Seven in Paris*, Make him, Murder him, Hang on a sec, that's a hostage eh, shoot him anyway...

*Below: You'll have no cigarette adverts in this game.*



*Hostages* is the latest game from Infogrames, the company that brought you the weird and wonderful *Captain Blood*.

**Infogames £9.95  
Tape, £14.95 Disk.**



Pinball games are few and far between, so any new ones will be welcomed by digital pinball wizards. Unfortunately, this one is way off target.

# TIME SCANNER

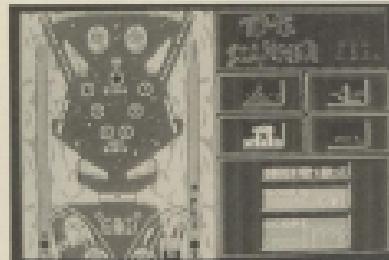
By Electric Dreams - £9.95 tape

**T**HIS IS THE long awaited continuation of the successful solo-op based on pinball. In the game you have inexplicably fallen into a time warp and the only way out is to complete four pinball tables. To add to your problems you have to complete three of them before you get a chance to play the fourth.

Each table has a theme and an objective. For example, on the Volcano table you must light up the letters in the word Volcano by hitting a transparent chute until finally the volcano erupts. Unfortunately, this makes the other targets, bumpers and rollers quite redundant. The same is also true of the Raiai and Saguannah (Egyptian) tables.

Another problem is that the tables are in two halves of a scrolling screen and it's almost impossible to get the ball from the bottom half back to the top. This can be important since the targets you must hit in the Saguannah table are all in the top half of the table; so are the two chutes that transport you to the other tables.

Unfortunately, things get worse as the game's graphics and speed are more in line with a 1988 Spectrum game than a 1987 C64 and the surprise must be that all 8-bit versions have been deve-



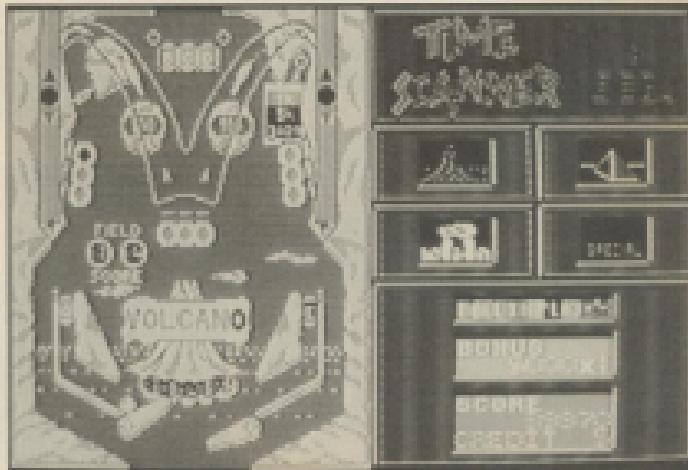
loped with the Spectrum in mind.

The reward for firmly, slowly and patiently completing a level is the release of two other balls so you can play with three at once

(which slows the game down, if that's possible) so that it takes several seconds for a ball to hit the top of the screen and bounce back to the flippers.

Tony Hetherington

Bottom Do you think that this would be, perhaps, the Volcano Screen?



INFO	
Gameplay:	33%
Graphics:	22%
Sonics:	41%
Lastability:	23%
Overall:	28%

Activision has enjoyed considerable success recently with a string of hits. This isn't one of them.

**US Gold - £9.99**

As part of the Dungeons and Dragons deal, US Gold has created a game to bring role playing to the masses.

**C**REATE a computer game based on Dungeons and Dragons that will appeal to arcade players. That was the challenge put to US Gold as its part of the three cartesian deal with SSI and D&D authors TSR. This is the result and it's a game that's played entirely with a joystick.

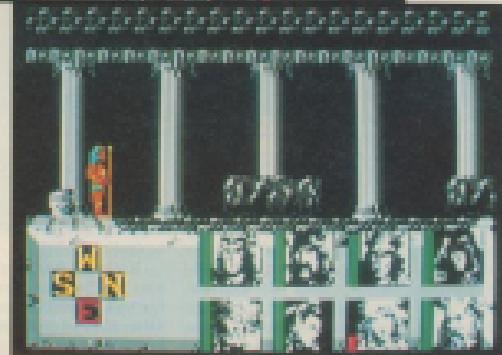
Unlike the other D&D games that are based on the Forgotten Realms, Heroes of the Lance is based on the Dragoon series of books and game modules that came about because players of the role playing game demanded more dragons in Dungeons and Dragons. This game features an ancient black dragon called Khianshi who guards the platinum disks of Midrealm. These disks are your only hope of restoring faith in the old Gods and foiling the evil Queen of Darkness' plan to rule the world.

The Disk is deep in the ruins of the Temple of Xai Tzurath which is now rife with Goli Dwarfs, giant spiders, undead and Dragoonians (a human dragon half breed created by the evil Queen). You control eight brave adventurers although only one appears on the screen at any time. Your party has the usual mix of fighters and spell casters which, in this game, are given their spell power through two staffs. Raistlin is the mage user and holds the staff of Magius which has 100 charges and can cast spells ranging from the ubiquitous cure light wounds (1) to Raise Dead (3) and the useful deflect damage breath (2).

The action takes place on a sideways scrolling screen with a compass that lights up when you reach a junction. This can be a little confusing, but since the game's in real time you haven't time to draw accurate maps. Con-



Left: I wonder if the staff of Magius is as heavy as the staff of Angua.



Below: Your Commodore - full of interesting locations.

has 200 charges and can cast spells ranging from the ubiquitous cure light wounds (1) to Raise Dead (3) and the useful deflect damage breath (2).

but is fast and furious, with joystick movements deciding whether you cut, slash or parry, or fire an arrow/crossbow in a distance attack. Should you resort to magic then the space bar freeze the game and presents a series of menus from which you can cast spells, pick up, drop and use objects and examine and select items.

Tony Hetherington

## INFO

Gameplay: 67%

Graphics: 55%

Sounds: 42%

Likability: 48%

Overall:

53%

# TREBLE CHAMPIONS

Challenge Software - £9.95 Tape

And so the footy season starts again. To coincide with this momentous occasion, Challenge Software deals us a dose of soccer management to test even Kenny Dalglish himself.

Challenge Software's first title to come our way is Treble Challenge, a football management game that seeks to expand the foundations laid by Football Manager and more recently, Football Director II. The latter game is a hard act to follow and the only way to do so would be to better it. And that's exactly what Challenge has succeeded in doing with a few features to increase the realistic aspect of games of this ilk.

The goal (as you intended) in Treble Champions is a very familiar one; win the top division, the FA Cup and the League Cup (hopefully all in the same season) and thus prove what an outstanding manager you are. This is done by manipulating players, mastering the transfer market

to improve the quality of your team, and other such chores performed by big-time managers.

Players have skills, age, fitness and potential, all of which have to be considered when selecting starting teams. The matches are played with the clock ticking away, and a table contains vital information about the players in each team's possession, the amount of free time and goals that a team has...thus also showing which player scored and in what minute.

The most unique feature of the game is the fact that you, as manager, only have a set number of hours to perform a weekly task. Different actions take different amounts of time, and once you have run out the more important decisions may undertaken that week will

have to wait. Also new to the game is the fact you can make two substitutions during a match, and replace your computer opponent.

Penalty shoot-outs are not often included in such strategy games, nor are they legal in League Cup competitions. Treble Champions boasts 4 divisions of 24 teams and uses a mid-league division of 20 teams. You can play on any of these difficulty levels, and start in any of the four divisions. Also, all the teams have named players which you can approach with the hope of purchasing, but must be done before the transfer deadline.

Presentation shows the game is not over-elaborate but is simple yet extremely friendly. There is a total menus though, but on this sort of game that is common. The graphics are enormous and there are a plethora of options waiting to be explored.

Treble Champions is possibly the most complete football strategy game to date - which is no mean feat, I assure you. It is large, complex and, most impor-

tantly, addictive - qualities which today's soccer games need to have. Until somebody produces as large a game, but with the capability of taking on human opponents, Challenge Software is sitting on the best soccer management game, and has a bright future ahead of it.

RK Henderson

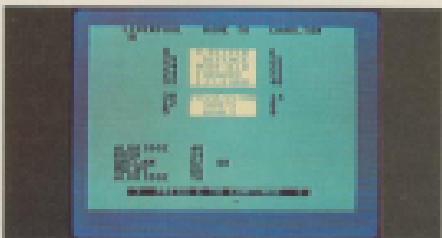
Challenge Software is a label for Micro-Software, a company with a very high pedigree for good quality strategy games. Treble Champions is its first retail release.

## INFO

Gameplay: 50%  
Graphics: 40%  
Stories: 30%  
Liveliness: 40%

Overall:

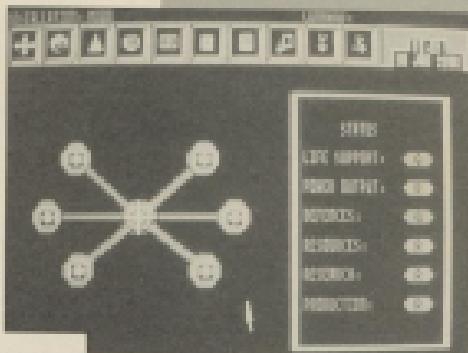
40%



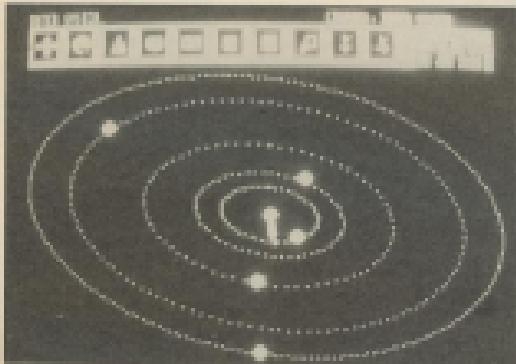
# MILLENNIUM 2.2

*Electric Dreams - £29.99*

The predictions were right. The asteroid did collide with the Earth killing all life on the planet. As commander of the moonbase only you can save mankind.



Above: It takes a Millennium to play the game.



Left: Land more, little white blobs are my commander's men.

**M**OONBASE 2 is a small research station with limited production and mining capabilities, a single Mark 1 energy unit and a population of only 100. Through careful management you must ensure the survival of the race by first establishing the moonbase and then setting up colonies on other worlds.

By clicking on the game icons you should soon be able to startup the colonies resource plant that mines raw materials these can be used by the production section to build new energy cells, probes to explore space, modules to support more people (100 each),

fighters to protect the base and bigger and better ships for the excursions into space.

Just when things seem to be going well, you receive a message from Mars claiming dominance in the galaxy and hostility against any moves you make to expand. Undaunted, you send out probes to search the solar system for a suitable planet to colonise at, by now, Moonbase is overcrowded. Sooner or later the Martians will attack and if you've researched and built fighters or orbital lasers you can try and stop them but you'll probably lose some materials and people in the raid.

Although *Moonbase*

2.2 looks like a strategy game it plays like an adventure and has a series of puzzles that must be solved before your progress. These include the need for raw materials, such as copper, that can't be mined from the Moon, the increasing Martian attacks and the risk of mutation and alien diseases that can spread rapidly through cargo ships to your other colonies giving you a desperate race against time to research and produce an antidote.

Although this PC version lacks the graphic appeal of others it still captures the feeling of exploring the unknown and the challenge

of ensuring the survival of the race.

Tony Herbigageon

I H F G

Gameplay: 68%

Graphics: N/A

Sonics: N/A

Lastability: 70%

Overall:

69%

Ocean - £24.95

# ROBOCOP

Part film character, part arcade game, all cop. It's the man in a can, and he's gunning for you. If you've been naughty that is.

I'm sure you've all seen the wonderfully violent film, Robocop, and if you haven't then you should jolly well do so. Well, this game isn't quite based on the film in one single aspect, but rather on the arcade game that followed.

After seeing the disappointing ST version (the Amiga one should be out now), I was dreading seeing what Urban could do on a PC. Surprisingly, the PC version is miles better than the ST game, and undoubtedly completes the arcade game.

You play Lieutenant Murphy, once fresh and blood, horribly blown to pieces by gangsters, who are secretly led by one of the senior officers at OCP. Murphy was scraped up, cleaned, and reprogrammed for law enforcement. Fun-

nily, what remains of his mind throws up images of the gang, and he sets out for revenge.

Robocop is a game of many parts and levels (there are 11), and starts by travelling from right to left, with hoodlums leaping onto the screen, all intent on murdering Murphy. Less is the art of pain. Armed with a standard pistol, three lives, and an ever decreasing energy level, you must fight your way through, picking up ammos along the way. Later in the game you get to pick up other weapons, which you'll certainly need considering what you're up against.

At the end of the first patrol there's an almost 3-D section where you have to nail a criminal who is hiding behind a woman hostage. This is a pleasant break after the first round and a chance

to concentrate before the really offensive criminals on level two, some of whom ride motorbikes.

Level four is a photofit against the time test, with information as to Murphy's killer being forwarded. After that it's killing all the way, taking out a drug factory, the pawn shop ED200, and a final encounter with the mysterious Dick Jones in the President's Office.

Robocop isn't an easy game, because your old Murphy flashes every time a bullet hits him, and while he's doing so he can't fire back. Needless to say there are killing zones at certain points along the way where you are caught in a murderous crossfire, and have great difficulty in getting out with one life left.

The graphics and animation are pretty good which

makes up for the dire sound effects, and with those bonus style sections thrown in to break up the action, this is one patrol worth going on Duncan Erans.

## INFO

Gameplay: 87%

Graphics: 80%

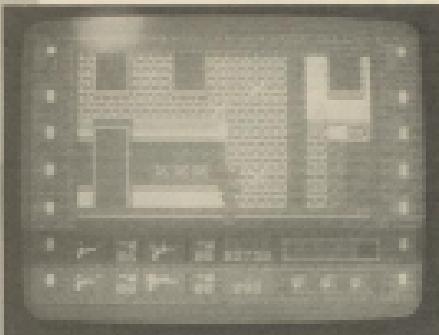
Sound: 20%

Lastability: 81%

Overall:

84%

With titles like WEC, Le Mans, Top Wolf, Robocop and numerous compilations, Ocean has been Ocean's year so far.



Above: Metallic mansions in an apocalyptic city.

# As the sun sets Gordon Hamlett gets funky with his remote-controlled robot.

*Magic Bytes - £9.99 Tape, £14.99 Disk.*

**R**ECENTLY qualified from graduate school as a robotics engineer, you have just started your first job. You are working in the cybernetic control centre involved in planetary exploration.

As a beginner, you cannot expect to be let loose on the latest technology from day one. So you are given control of a second rate robot to do your dirty work. The planet to be explored is what it seems. Real places being a touch expensive, the company has issued an artificial one consisting of some ten different platforms. The idea is that you guide your robot over the surface trying to find the exit to the next level. Success on the first five platforms and you are given control of the latest in robot technology for the next five.

The platforms consist of a series of small mazes with different areas only accessible when you have the appropriate colour coded key. There are creatures that shoot at you and hidden mines, all of which is bad news. At the start of the game, you have no defence at all. You must find your laser and mine detector first. There are also one way elevators and transport pads to be negotiated.

There is nothing original about Nightdawn. Wandering round mazes looking for different keys has been seen many times before and there is nothing new in this game to rouse you out of your slumber.

The graphics are poor - fuzzy, blurred and small. Indeed, the Amiga version was similarly disappointing.

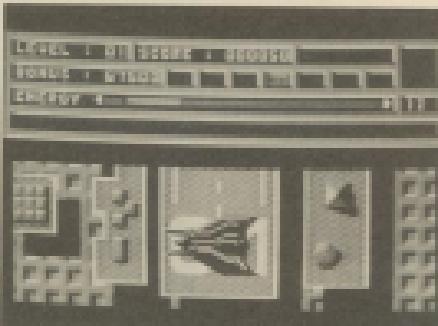
-looking more like I imagined this C64 version should look.

There is nothing particularly wrong with Nightdawn, it just doesn't generate any degree of excitement whatever. Lasting appeal is limited too. Once you have learned the best path through a particular level - where the traps are and so on, there is nothing to stop you completing that particular level again with great ease, every time you play.

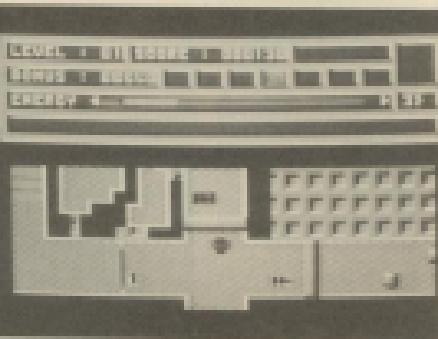
## INFO

Gameplay: 30%  
Graphics: 40%  
Sonics: 30%  
Lastability: 40%  
Overall:

40%



Above: Ouch, what a large metallic spider!



Above: What a large metallic spider!

NIGHTDAWN

# THE STORY SO FAR

Elite - £19.99

**C**ompilations are nothing new, and you might say nothing exciting. If you wanted to be really cruel you might also say we're cynical marketing exercises designed to tempt the 'present shopper' into buying what you've already had anyway.

Compilations can be value for money, but looking at this one from Elite it appears that *The Story So Far* is a pretty short one. Four games is rather stingy, especially as it doesn't contain one of Elite's better games *Overlander*, or even *Live and Let Die* which the 8-bit packages get.

What you do get are *Buggy Boy*, *Ikaru Warriors*, *Battleships* and *Beyond the Ice Palace*. *Buggy Boy* was a 3D racing game, with five tracks, and loads of obstacles rather than competing cars.

With bonus points, time gates and the ability to drive on two wheels, and then fly through the air, you can see this isn't exactly *MotoCross*. It is good fun though, because the tracks are graded in difficulty and even the fading reactions of this old back are good enough to complete the first three.

*Ikaru Warriors* is one of my favourites, being the first arcade *Commando*-style game to feature simultaneous two-player action. It isn't stunning on the Amiga, in fact it looks just like the ST version, but it is very playable and features tasks with which you run the goodness, as well as shooting and grenade-throwing.

There's a lot of surface gloss on *Battleships*, but that doesn't cover up for the fact

that this is a very standard conversion of the pen and paper game. I suppose it'll save a few trees, and you can play against the computer should you be so bored.

And finally off we go into arcade adventure land with vertical and horizontal scrolling, three types of weapon, dreadful sound effects, decent graphics and very rough gameplay. Just getting through the first level of *Beyond the Ice Palace* is a major achievement, and when you encounter the even harder guardians of level two you'll realise that this game has never been properly played.

Normally compilations can stand a couple of the games being soft, or if you already own one or two, but with *The Story So Far* there isn't really any margin for error, and whichever way you look, you're not exactly getting the bargain of a lifetime.

Duncan Evans

## INFO

Gameplay: 82%

Graphics: 80%

Sonics: 72%

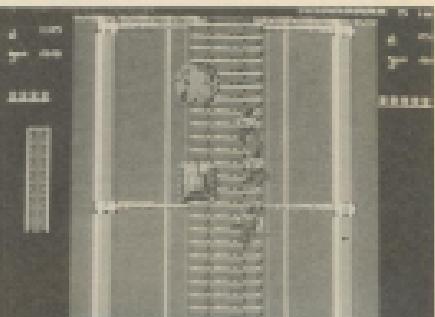
Usability: 84%

Overall:

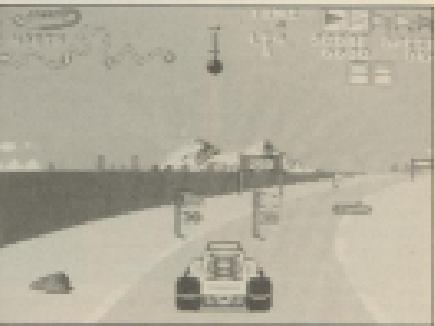
**80%**

Elite Systems has the best offer after running out of space. *Overlander* vs. US Gold's *Roadblazers*, and hasn't released anything more since.

Only a compilation, or a potted history of Elite Systems work on the Amiga? Duncan Evans gives you the real story.



Above: *Ikaru Warriors*.



Above: *Buggy Boy*.



Above: *Beyond the Ice Palace*.

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■ REVIEW

# 1st CD

Can the ageing  
Commodore 64 keep up  
with the brash young  
upstarts of the 16-bit  
world. Maybe it can,  
with this CD interface  
from Rainbow Arts.

## EDITION



**T**here has been a lot of speculation about what CD-ROM is going to do for the computer and entertainment industry. Gigabytes of code, like animation sequences stored on CD, with stirring musical scores to accompany the action.

Even now we are seeing the emergence of the new technology, witness Microsof's releasing *Defender of the Crown* on CD for connecting up to PCs. Then's the PC Engine, with its CD software, and who knows that is around the corner.

Well like you I can only guess, but I'd never have guessed what Rainbow Arts was going to do. In a seemingly bizarre marketing move, the company has released the 1st CD-Edition. This package contains an interface which plugs into the cassette port, a CD and an instruction manual.

The interface which translates the audio output of a CD player into the audio format of the cassette port is small and fragile looking. It isn't even boxed and gives the impression that a moment's carelessness would result in it being snapped in half.

The only catch with this package is the CD player. Unless the game's on the CD, for this is a compilation, were of such brilliance that it was worth laying out £129 or so for the CD player, or you already had one, then it isn't going to be of much use.

Setting everything up is a minor hassle, simply because of the need to have all the equipment in close proximity. It says in the manual that you can use a portable CD unit just as easily, and to this is far easier to set up I gave that a go.

Plugging in the interface, connect a phone plug lead from the interface to the Line out on the CD player, turn on your C64 and insert your disc and you're ready to roll. Easy enough, you then just type LOAD and sit the CD player in action. After about 45 seconds you should be into the main menu, and the CD player can be stopped or paused now. Also the portable CD unit didn't like working with the interface so it was necessary to find the big unit out. Take note, if you only have a portable, it might not work.

My main unit worked fine though, and the menu offered a choice of ten games for my deliberation. After making a selection, the menu informs you to jump to a specific track number where the game is stored, then press space. After anything between 10 and 30 seconds later, the decompressed program is running happily and you can turn the CD player off.

This is all good and well, but let's look at what you're getting a bit closer. For one thing the loading time isn't particularly fast. In fact it's quite slow when you realize how little data is being loaded, but is comparable with today's fast loaders on the C64 disk drives.

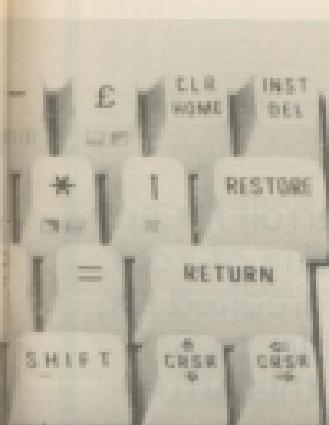
How much room on the CD does all this take up? About 11 minutes worth, and that's pushed out. To try and fill up the rest of this very empty disc, the programs are repeated twice, simply add 30 to the track number to access them, and there is a selection of 10 music tracks by Chris Shakespear (what to listen to through your amplifier). These music tracks are nothing special, and not worth buying the CD-Edition for.

The actual games, almost an oversight in this strange project are not your state-of-the-art games. Some of them are older than my mother, but for the record, this is what you get: David's Midnight Magic (pinball), Leaderboard, Mission Elevator, Impossible Mission, Dropzone, Lasercutter, Solomon's Key, Jinks, M.U.L.E., and Pet Hill.

Although Rainbow Arts has been quite brave in testing the water with this package, it has cut corners as far as paying for new games and the production standards of the interface are concerned.

If you don't have a CD Player then forget it. If you already do, and you can lug it close enough to your computer then all you have to worry about is whether you really want the benefit of having ten very old games and some forgettable music on a compact disc. This isn't the technology of tomorrow, this is Rainbow Arts trying to cash in on a current fashion.

Damian Evans



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## Editor's Note

Apologies must go to Mr. M. Carroll for an error published in the August issue of Your Commodore. On page 54, we accredited Mr. Carroll's program, Disk Scrambler to S.T. Burke. Apologies all round for this error.



# Software for Sale

*If you think that one of our programs looks very interesting, but you can't afford the time to type it in, then our software service will help you out*

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Everyone has probably faced this problem. When it does happen it's a matter of spending hours searching through the program for any typing mistakes. No matter how long you look or how many people help you, you can usually guarantee that at least one little bug slips through unnoticed.

The *Four Commodore Software Service* makes available all of the programs from each issue on both cassette and disk at a price of £6.00 for disk and £4.00 for cassette. None of the documentation for the programs is supplied with the software since it is all available in the relevant magazine. Should you not have the magazine then back issues are available from the following address:

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## The Disk

Programs on the disk will also be supplied as totally working versions, i.e. when possible we will not use Basic Loaders thus making use of the programs much easier. Unfortunately at the moment we cannot duplicate C16 and Plus/4 computers. However programs for these machines will be available on the disk.

What programs are available?

At the top of each article you will find a strip containing the article type, C64 Program etc. So that you can see which programs are available on which format, you will also find a couple of symbols after this strip. The symbols have the following meaning:



This symbol means that the program is available on cassette.



These programs are available on disk.

## Please Note

Since the programs supplied on cassettes are total working versions of the programs, we do not supply disk-only programs on tape. There is however a problem in placing a program that expects to be reading from disk on to tape.

## MAY 1989

**ANTI-FREEZE** - Protect your C64 programs from cartridge-based viruses.

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Corrected or disks are available from March 1989. Please ring the editorial office (0942-66531) for details of these.

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# NEXT MONTH

## A NIGHTMARE ON ELM STREET

Freddy Krueger - the man with the designer cooking utensils strapped to his fingers - is finally to make it to the home computer.

## NEON ZONE

The case with many columns (over!), John Cook, deals in a dose of arcade action, and explores many out-of-the-ordinary.

## COMIC WATCH

A look at the wonderful world of men in tights, and their related computer games.



Plus Play By Mail Games (boxed), More Wobbly Compos, Lambarreviews, and Your Programme...

# THE END IS NIGH



## Landscape Gardening

**A**PPARENTLY, according to a press release sitting in front of me, there is to be a new landscape for the immensely popular Paparazzi (so popular in fact, that the 3D and Amiga versions now to be found in the 8-bit chart in Computer Trade Weekly). Originally plans were to have it based on Samson legend, but wild and wacky Electronic Arts has a far better idea in mind.

The new landscape is now titled 'The 8ti Plans', with computer print-out paper as the land, computers as the seedlings (from the ZX81 to a Cray) and cigarette stubs and pencils as landscape features. To be honest, I think there's a little flesh tagging going on here.

## Earwig 'O'

**O**n a charitable note, the Grandstair charity football match (which the jeanses lost abysmally last year) is to go ahead, and certain companies are taking it very seriously indeed.

The charity in question is the Hillsborough disaster appeal - a charity close to my own heart due to my support for Liverpool Football Club. Some companies are taking the game so seriously that they aim to field very strong sides. One company (who shall remain nameless) have even announced that Kenny Swain (ex-Manchester City player) will be in their squad.

Let's just hope that the reason for playing is not washed over by inter-company rivalry.

## Gang Bang

**P**SYGNOSIS has recently announced the fact that they have lost a large consignment of copies of Blood Money in a hijack of a British Lorry bound for Paris. Although the lorry contained valuable clocks and lights, the French gang involved only stole the Amiga version of the recent game.

If you've stopped whilst strolling through the streets of Paris, and noticed a dirty French man in a brown coat smoking Gauloises, if you would like to purchase a piece of software, don't worry, he's not trying to sell you a dodgy sex aid.

I'll see ya next month...  
Rik Henderson



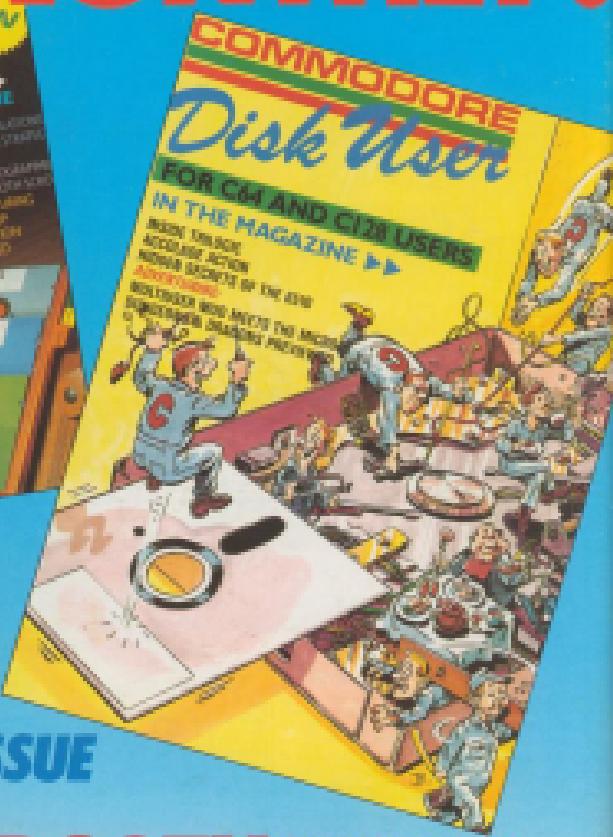
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